

THE ROYAL CANADIAN INSTITUTE

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THE JOURNAL

OF THE

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ROYAL ANTHROPOLOGICAL INSTITUTE

111

OF

GREAT BRITAIN AND IRELAND.

MS Vol XIV

VOL. XLI.

PUBLISHED BY THE

Royal Anthropological Institute of Great Britain and Ireland.

50, GREAT RUSSELL STREET, LONDON, W.C.

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NOTICE.

For convenience of reference, all volumes of the new (imperial octavo) series which began in 1898 are numbered in continuation of the old demy octavo series Vols. I-XXVII. Thus Vol. I of the imperial octavo series=Vol. XXVIII of the old series; and the present Vol. XLI corresponds to N.S. Vol. XIV.

The Index to the present volume includes an index to the Institute's monthly publication MAN for the year of issue 1911.

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NOTE.—In Vol. XL the illustrations on pp. 337, 339 and 347 were, by the courtesy of Dr. Marcel Baudouin, Secrétaire Général de la Société Préhistorique de France, reproduced from *Compte-Rendu Congrès Préhistorique de France*, 5th Session, Beauvais, 1909.

JOURNAL

OF THE

ROYAL ANTHROPOLOGICAL INSTITUTE

OF GREAT BRITAIN AND IRELAND..

REPORT OF THE COUNCIL FOR 1910.

The Council is happy to be able to report another year of substantial progress, and is pleased to record the fact that 37 new fellows have been elected. The total membership now stands at 511. Amongst the new fellows, the Council is glad to welcome Mr. H. S. Kingsford, who (in the capacity of Assistant Secretary), for a period of over eight years, entirely devoted himself to advancing the interests of the Institute.

The numerical gains and losses are expressed in the following table :—

	Honorary Fellows.	Corresponding Fellows.	Local Corres- pondents.	Affiliated Societies.	Members of Affiliated Societies.	Ordinary Fellows.		Total Ordinary.	Total Membership.
						Compound- ing.	Subscrib- ing.		
1 Jan., 1910 ...	41	5	40 ¹	1	1	78	334	412	490
Loss by death or resignation.	-1	-1	-4	—	—	-2	-20	-22	-28
Since elected ...	+3	—	+2	+1	+4	+1	+36	+37	+47
1 Jan., 1911 ...	43	4	38 ²	2	5	77	350	427	511

¹ Of these 10 are also Ordinary Fellows.

² Of these 8 are also Ordinary Fellows.

Among the losses which the Institute has suffered through death are—Professor Paola Mantegazza, Honorary Fellow; Mr. T. W. Saunders, Corresponding Fellow; Colonel George Earl Church, Mr. R. Fischer, Dr. T. M. Hocken, Mr. C. Letts, and Deputy-Surgeon-General F. M. Skues.

Professor Mantegazza, who died on January 28th, was an honorary fellow of long standing. His services to anthropology are well known to all Fellows. At the time of his death, he was President of the "*Società Italiana d'Antropologia, Etnologia e Psicologia comparata*."

Mr. T. W. Saunders, one of our few remaining corresponding fellows, was chiefly known as a geographer. In 1868 he became assistant geographer to the India Office, and for nearly twenty years, until his retirement, was fully occupied with his duties there, and the publication of many works on his own particular subject.

Colonel George Earl Church, a fellow and one of the chief authorities on the tribes of Central South America, died on January 4th. He was the author of many papers dealing with the country to which he devoted the greater part of his interests, and was engaged upon a book dealing with its ethnography at the time of his death.

In Mr. R. Fischer and Deputy-Surgeon-General F. M. Skues, the Institute loses two of its oldest members, both these gentlemen having been elected in 1866 as members of the Anthropological Society.

Dr. Hocken, one of our colonial members, was well known as a contributor of papers to the anthropological literature of the colonies, and the possessor of a large collection, illustrative of the ethnology of New Zealand.

Anthropologists will also regret the loss of the following explorers and students, whose works have contributed much, directly or indirectly, to the study of mankind. By the death of Lieutenant Boyd Alexander, England loses one of the most intrepid explorers of the younger generation. Though his personal interests were mainly zoological, he contributed much to our general knowledge of Africa, and his published works contain material of great importance to students of anthropology.

The death of Colonel C. R. Conder will be felt as a severe loss by all who take an interest in the archaeology of the Near East. His many works are well known to fellows of this Institute, but those which perhaps brought him the greatest distinction were the volumes which contained his researches on the Hittites.

Mr. David Hanbury was well known as a traveller and explorer in North America; though he published little, he made several ethnographical collections, the most important of which he presented to the British Museum.

Professor Auguste Meitzen died at Berlin in January. He was well known as a student of European ethnography, and his works were almost entirely confined to that sphere.

Mr. Harmuzd Rassam, who died in September, though more of an explorer

than a student, had nevertheless, by his eminent services in the field, contributed much to the study of Mesopotamian archaeology. He was a native of Mosul, and it is interesting to note that he served his apprenticeship under Sir (then Mr.) Austin Layard.

MEETINGS.

During the year ending December 31st, 1910, twelve ordinary meetings were held. At these 16 papers were read: 9 dealing with ethnographical, 5 with archaeological, and 2 with physical subjects. Seven exhibitions of specimens were made.

HUXLEY MEMORIAL MEDAL.

The Huxley Memorial Medal was this year presented to Professor W. Boyd Dawkins. The title of his lecture, which was delivered on November 22nd, was "The Arrival of Man in Britain in the Pleistocene Age."

PUBLICATIONS.

During the year, two half-yearly parts of the *Journal* have been issued, viz., Vol. XXXIX, 2 (July–December, 1909), and Vol. XL, 1 (January–June, 1910). Of the former 88 copies were sold, and of the latter 84.

With regard to *Man*, the usual twelve monthly parts have been issued. The sales show a considerable increase, and the Council is happy to record the fact that, for the first time in its history, the balance sheet shows a slight surplus. Owing, however, to the increased expenditure of the Institute, particularly in the matter of rent, the Council thinks that it would be unwise, for the present, to abandon the system under which members are asked to subscribe for *Man*.

LIBRARY.

The number of accessions to the library easily constitutes a record, amounting to 455 in all. The exchange list has been augmented by the addition of four foreign publications.

A tentative rearrangement of the books on geographical lines has already been made, and steps are being taken to complete this, to prepare a new catalogue, and to compile a list of desiderata, with a view to filling up numerous gaps. The Council would be glad to receive from fellows any donation of works, dealing with anthropology, exploration, etc., which do not happen to be in the library. It is proposed that lists of desiderata be published from time to time in *Man*.

BEQUEST.

Mr. Americus Featherman died on January 27th last, bequeathing his estate to the Institute in trust: (1) for the publication of the remaining volumes of his *Social History of Mankind*, and (2) for the foundation of a lectureship in connection with anthropology.

EXTERNAL.

A memorial presented to His Majesty's Government, praying for an annual subsidy to the Institute, though sympathetically received, did not result in any material assistance being granted. The Council is now endeavouring to raise funds from other sources for the establishment of an Imperial Anthropometric Bureau.

A Special Committee was appointed by the Council, to consider the possibility of extending an invitation to the International Congress of Americanists, to meet in London in 1912. The Committee having reported favourably, the invitation was sent, and accepted. The formation of an Organising Committee is now under consideration, and a number of distinguished gentlemen have promised their services. It will be necessary to raise a fund to meet the expenses incident to the entertainment of the Congress, and the Council will be glad to receive subscriptions towards that object.

TREASURER'S REPORT FOR THE YEAR 1910.

On the 31st December, 1910, the assets of the Institute were as follows:—

	£	s.	d.	£	s.	d.
<i>Assets (not immediately realisable):—</i>						
Books in Library, Publications, Furniture as per estimate of 1903	...			885	0	0
<i>Realisable Assets:—</i>						
£300 of Metropolitan Consolidated Stock, present value	301	10	0	
£886 Burma Railway Stock, present value	963	10	6	
Balance at Bank	53	14	1	
Petty cash	0	1	0	
Arrears of subscriptions, £138 12s. 0d. valued at	65	0	0	
			<hr/>			
				1,353	15	7
Total Assets				<hr/>		
				£2,238	15	7
<i>Against which there are liabilities:—</i>						
Anthropological Notes and Queries	...		68	10	8	
Library Fund	15	6	0	
			<hr/>			
				83	16	8
Leaving a surplus, if all property were realised,	<hr/>					
of	£2,154	18	11

Considering only our immediately realisable assets :—

						£	s.	d.
These amount to	...	...	...	...	...	1,353	15	7
Less	...	...	...	...	...	83	16	8
						<hr/>		
						£1,269	18	11

The state of ideal solvency also implies the following additional liabilities :—

						£	s.	d.
<i>Journal</i> (1910) ...	...	...	...	...	...	325	0	0
<i>Man</i> (December) ...	...	...	...	...	...	13	0	0
Unexpended life subscriptions	...	...	...	...	...	378	0	0
						<hr/>		
Total	...	...	...	...	...	£716	0	0
Our immediately realisable Reserve Fund is	...	...	...	...	...	1,269	18	11
						<hr/>		
Showing a surplus in our Reserve Fund of	...	...	...	...	...	£553	18	11

THE FINANCIAL POSITION OF THE INSTITUTE.

The total receipts of the Institute are £118 more than last year.

The receipts from annual subscriptions are £62 more.

The receipts from the *Journal* are £7 less, and from *Man* £27 more than last year.

The total expenditure is £256 more than last year, an increase due mainly to the purchase of an epidiascope (£92), increase in rent and housekeeping (£46), increase in salaries (£60), increase in cost of printing and stationery (£25).

Many of these increases are of a temporary nature, and if our membership continues to increase as in past years, we may expect next year to find our receipts more than equal to our expenditure, notwithstanding the increased annual cost of our new premises.

J. GRAY, *Hon. Treasurer.*

ROYAL ANTHROPOLOGICAL INSTITUTE

Receipts and Payments

	RECEIPTS.	£	s.	d.	£	s.	d.	£	s.	d.
BALANCES in hand, January 1st, 1910 :—										
Balance at Bank		238	8	7						
Petty cash		1	14	9						
Deposit at Bank		1000	0	0						
					1240	3	4			
Less Balances owed as per 1909 Account :—										
Library Fund		1	2	8						
"Notes and Queries"		68	4	8						
					69	7	4			
SUBSCRIPTIONS :—								1170	16	0
Current	612	3	0							
Arrears	48	6	3							
Advance	33	12	0							
Life	31	10	0							
Affiliation	1	0	0							
					726	11	3			
Less Refunds	4	4	0							
Postdated Draft.....	2	2	0							
					6	6	0			
SALE OF JOURNAL.....	175	2	7					720	5	3
Less Refund from Petty Cash.....	12	0								
					174	10	7			
SALE OF HUXLEY LECTURES					3	7	4			
								177	17	11
"MAN"										
Net receipts		163	17	5						
Postage, etc., paid out of gross receipts		22	2	3						
								185	19	8
ADVERTISEMENTS in "Man"								0	15	0
DIVIDENDS and Interest								28	16	4
LIBRARY FUND :—										
Balance, January 1st, 1910	1	2	8							
Refund	0	6	6							
Grant	30	0	0							
					31	9	2			
Less Binding and Books					16	3	2			
								15	6	0
"NOTES AND QUERIES" :—										
Balance		68	4	8						
Received, 1910			6	0						
								68	10	8
HOBLEY'S "UGANDA"								24	10	7
"BIBLIOGRAPHY"								52	19	0
"REPORT OF ANTHROPOMETRIC COMMITTEE".....								11	11	7
SUNDRIES.....								24	17	6
								£2,482	5	6

OF GREAT BRITAIN AND IRELAND.

for the Year 1910.

PAYMENTS.		£	s.	d.	£	s.	d.
RENT		176	10	0			
Less rent received		9	0	0			
					167	10	0
JOURNAL		326	10	10			
Less refund		0	14	0			
					325	16	10
ADVERTISING					11	8	0
"MAN"		181	17	11			
Postage, etc.		22	2	3			
					204	0	2
SALARIES					192	17	5
HOUSEKEEPING					39	0	10
STAMPS AND PARCELS					50	6	10
PRINTING AND STATIONERY					73	15	9
LANTERN					106	15	7
INSURANCE					2	5	4
TRAVELLING					4	12	3
GRANT TO LIBRARY					30	0	0
HUXLEY MEDAL AND LECTURE					7	13	11
HOBLEY'S "UGANDA" :—							
Balance as per contra		24	10	7			
Less received in 1910		2	12	0			
					21	18	7
BIBLIOGRAPHY :—							
Balance as per contra		52	19	0			
Less received in 1910		0	19	4			
					51	19	8
REPORT OF THE ANTHROPOMETRIC COMMITTEE:—							
Balance as per contra		11	11	7			
Less received in 1910		3	13	1			
					7	18	6
REPAIRS AND FITTINGS TO PREMISES					46	14	3
TELEPHONE					6	10	0
LEGAL EXPENSES.....					17	19	0
TYPEWRITING					2	3	11
INVESTMENT IN BURMA RAILWAY STOCK					1000	0	0
SUNDRIES					57	3	7
BALANCE at Bank		53	14	1			
PETTY CASH.....		0	1	0			
					53	15	1

£2,482 5 6

We have examined the above accounts and compared them with the Books and Vouchers relating thereto, and find the same to be accurate.

(Signed) RANDALL H. PYE,
ORMONDE M. DALTON, } Auditors.

January 12th, 1911.

PRESIDENTIAL ADDRESS.

THE METHODS OF ETHNOGRAPHY.

BY SIR HERBERT RISLEY, K.C.I.E., C.S.I.

I NEED not remind the Members of the Institute that a few months ago we were invited by the Colonial Office to form a special committee for the purpose of advising as to the use that should be made of the ethnographic material collected by Mr. Northcote W. Thomas in Nigeria, and on the large question of prosecuting further researches of the same kind in West Africa. Many of us will also remember that the committee appointed by the Treasury, in 1907, to consider the organisation of Oriental studies in London, laid stress on the importance of studying the character, the religion, the customs, and the social organisation of the various peoples who come under British rule. This recognition of the direct bearing of anthropology, in the widest sense, on the administrative problems of the Empire, has suggested to me that the present is an opportune occasion to set down some of the conclusions that may be thought to arise from the experience gained in India of ethnographic inquiries conducted on a definite scheme in a large and populous country. Perhaps my best plan will be, first to describe the operations actually carried out in India, and then to consider how far these afford useful guidance for similar undertakings elsewhere.

In August, 1882, Sir William Plowden, then Census Commissioner for India, reported that in the course of the census of 1881 an endeavour had been made to obtain on a uniform method statistics of the castes and occupations found throughout British India. He suggested that lists of these groups should be compiled for each district, showing the vernacular designations used by the enumerators in filling up the original returns, and that the local officials should then be asked "to ascertain from the best authority in their district the peculiarities of each caste, or occupation, and by what names, if any, in other parts of the country it is known to those who belong to it." When these inquiries had been completed it was proposed to publish "a brief abstract embodying the results of the inquiry as a supplement to the lists." Sir William Plowden thought that "with a little care and attention, this might be completed in every province in India, on a really useful basis, by the end of another two years at the outside, and the advantage of having such information at hand at the next census of India requires no comment."

The Government of India, as then constituted, rose to the occasion. They evinced a benevolent interest in Sir William Plowden's proposal, and even went so far as to hazard the opinion that if it were efficiently carried out the results would be of great value. They made it plain, however, that they would not spend a penny on the operations, and that they would not allow the provincial governments to spend much; and they threw out the encouraging suggestion that as the work was not of an urgent nature it could "probably be undertaken by the officers selected, in addition to their ordinary duties." With this dubious benediction they laid the matter on the knees of the local divinities. Here it fared very much as might have been expected. Most of the local governments regarded it as an administrative luxury, and took no action at all; two jumped at the idea of getting the thing done for nothing in the intervals of ordinary work; and one alone realised, thanks to the insight and initiative of the late Mr. Colman Macaulay, C.I.E., that it was worth doing thoroughly and at once.

In proposing to the Government of India in January, 1884, that I should be employed for two years to collect and compile information on the lines indicated by Sir William Plowden, the Bengal Government referred to the rapid effacement of the old aboriginal faiths, the changes that were being brought about by the opening of communications, the increase in the facilities for travel, and the spread of education. "There is nothing to be gained," they said, "and much to be lost by postponing this important work. If it is not undertaken now, a mass of information of unsurpassed interest will be lost to the world." My selection to carry out these researches was due, I believe, to the accident that as a district official in the picturesque highlands of Chutia Nagpur, I had been thrown much in contact with the Santal and Bhumij tribes, and had settled a prehistoric land dispute and removed administrative difficulties in which the tribes played a prominent part. These experiences are curious enough to justify some digression. Thirty years ago I was placed in charge of a rather primitive subdivision, which has since been entirely transformed by the advent of two railways, and the opening of innumerable coal mines. In those days there was only one road, and that a bad one; no one spoke any English, and the Santals, when they gave evidence in court, took a weird oath on a fragment of a tiger's skin, tied to the railing of the witness box; on this they apostrophised the demons of the sun and moon, to the effect that if they swore falsely they might be eaten by the tiger demon, not the mere physical tiger, but the spiritual archetype of all tigers that be. My attention was further drawn to them by the repeated appearance in rent suits and criminal cases relating to land, of a Hindu money lender and land grabber, whose head was swathed in muslin bandages so that only his eyes and mouth were visible. Some years before, he had harried a Santal village beyond endurance, and they had cut him up with their little curved axes, and left him for dead. Money lenders, however, are proverbially tenacious of life, and he made a wonderful recovery; but he was so disfigured that he could never show his face again. The land dispute which had led to this and many other acts of violence,

turned out to be one of immemorial antiquity, which Colonel Dalton had tried in vain to settle some twenty years before my time. It affected fifty-two Santal villages, and its main difficulty consisted in the fact that there was no unit of superficial measurement. The idea of an acre was unknown, and rent was assessed by the *muri*, or the amount of land that was supposed to be capable of taking some fifty pounds of seed. This was judged by the eye, when or by whom nobody knew, and each *muri* consisted of a number of plots scattered all over the parish, and varying year by year as the occupier took in a fresh piece or allowed a strip to fall out of cultivation. Eventually, by cautious diplomacy, I induced the Santals to let me measure their land, and assess rents by area and quality. The economic chaos and agrarian strife that had prevailed for generations was ended by a formal agreement between them and their landlord, which I believe still holds good. A year or so later the same question arose among the Bhumij tribe in a large estate covering some 800 square miles of country, where a European firm holding a long lease from the local raja, a Hinduised Bhumij, were attempting to assert their legal rights by measuring holdings and assessing rents in the regular fashion. But a rent law which assumes the existence of normal conditions is not an ideal instrument for dealing with conditions wholly abnormal, and the position soon became so impossible that both parties entreated me to arbitrate and fix fair rents. Unhappily before this stage was reached arrows were flying about, business arrows with leaf-shaped heads of local iron, sharp as razors. One of the European agents of the firm had the narrowest escape imaginable, and his native factotum, a corpulent and pacific Bengali, was shot in the stomach with an arrow, which penetrated 8 inches, but failed to reach the peritoneum through the layer of fat which protected it. When this incident occurred I was in camp some thirty miles off, staying with a charming old gentleman who had served under Sir William Sleeman in his campaign against the Thugs. We were out for a walk, concerting a beat for bears, when an agitated letter reached me stating the facts and asking me to come to the factory. I translated the letter to my friend, who knew no English, and asked whether the arrow would have been poisoned. He said, "Certainly not," and when I reminded him that I was continually paying rewards for tigers, leopards and bears that had been killed by poisoned arrows shot from a spring-bow set on their tracks, he replied without hesitation that the poison that was fatal to a tiger would have no effect upon a man. It did not seem discreet to impugn the accuracy of this queer belief, and I let the matter drop.

In the course of my negotiations with the Santals I made friends with the heads of their tribal organisation, and was thereby enabled to settle a serious difficulty that arose in connection with the census of 1881. During the preliminary stages of that census there were circulated all over the Santal and Kol country mysterious slips of paper, calling on the people not to plough on Sundays, to kill all their chickens and all their white goats, and to await the coming of the guru. After some time, when men's minds had been sufficiently troubled, the guru appeared on the scene, a bearded cripple, with withered legs no bigger than a

child's, who was carried about by his disciples seated on a long box, which he called his throne. Like Paracelsus, he had a wonder-working sword, and in the Ranchi district he caused a mango tree to grow to a respectable size in a single night. Soon after he had wrought this miracle, and while his followers were engaged in putting a railing round the tree, he was arrested under my orders and was deported to Lucknow for interfering with the census and stirring up land troubles. When he was brought in by a body of armed police, we found in his "throne" about £200 in cash, and a quantity of jewellery worth a substantial sum. His experiment in spiritual advertisement had therefore proved lucrative. A few months after his departure the results of his meddling were seen. The Santals and several cognate tribes were seized with unreasoning panic, deserted their villages, took refuge in the jungle, and announced their intention of staying there until the census was over.

This was the position that confronted me on my return from a fortnight's leave. I sent for my friends among the Santal headmen and, having loosened their tongues with whisky, extracted from them the amazing story that a strong acid had been sent out from England for the purpose of branding the entire tribe in a highly indelicate fashion. The men were then to be sent to the frontier to carry hospital litters, and the women were to be distributed among the tea gardens in Assam. On being asked whether they believed this rubbish they looked foolish and wriggled their toes (a well known sign of embarrassment), and replied that everyone said the story was true, and if it was not, why were they being counted? Then it was my turn to ask questions: "Had there not been famines in 1866 and 1874?" "Certainly there had, and many Santals had died." "Why did they die?" "Because there was no rice." "Did not the government give rice?" "Yes, but not enough." "Well, if you are not counted how is the government to know how many of you want rice?" "That's the reason, is it?" "Of course it is, and if you are not back in your villages within a week there will be no rice for you when the next famine comes."

They were all back in three days, and I am by no means sure that some of them were not counted twice over. They were quite sharp enough for that, though in a neighbouring district I found some of them curiously backward in the matter of counting themselves. I was in camp in a locality where the enumeration of houses (an essential preliminary of a census) was in serious arrear, and the sub-inspector of police who was responsible for the work, excused himself on the ground that the Santal village watchmen could not count more than about five. This sounded improbable, so I had a dozen of them sent for and questioned them myself. When asked how many houses there were in his village, one man after another either could not answer or made some wild guess that was palpably worthless. The difficulty, therefore, was a real one; the villages were scattered over a huge area; it would have taken days to send a regular constable round to count them; and the sub-inspector was evidently delighted at the *impasse*. Luckily for my reputation for resource a dim memory passed through my mind of the trouble that some traveller, I think

Sir Francis Galton, had had in bartering tobacco for sheep. He was paying twenty sticks of tobacco for ten sheep, and the only way of convincing the seller that he was not being swindled was to tether the sheep in a row and to deposit two sticks of tobacco in front of each sheep. Following this precedent, I gave one of the Santals a handful of pebbles and told him to put one down for each house in his village. This he did willingly, mentioning the householder's name in each case, and arranging the pebbles in front of him so as to present a rough plan of the village. When I asked him how many pebbles he had got (there were about twenty) he replied indignantly, "How should I know?" But if the village watchmen could not count the regular police could, and the house census of about 500 square miles of wild country was completed by the primitive method of requiring those whose arithmetical sense was imperfectly developed to send in returns of houses in the form of a handful of stones.

My digression has been a lengthy one, but it may serve the useful purpose of illustrating the wide range of the inquiry that had to be undertaken. The population to be dealt with numbered over seventy millions, and comprised at one end animistic races, like the Santals, with no writings of any kind, no organised priesthood, and no traditions of the smallest historical value: at the other end were the higher castes of Hindus, with all the treasures of Sanskrit literature behind them, and an elaborate system of law and custom, based upon that literature, regulating every incident of their daily life. In these circumstances, it was obviously impossible to follow in the footsteps of earlier workers in the same field and rely mainly upon personal inquiry and observation. That, of course, is the more excellent way, but their experience had shown that it must fail to cover the ground within any reasonable time. Buchanan's inquiries lasted for seven years, and extended only to seven districts of Bengal. Colonel Dalton's *Descriptive Ethnology*, based mainly upon his personal observations during many years of district work, was confined, for the most part, to the tribes of Assam and Chutia Nagpur, and did not touch the vast population of the plains. Dr. Wise worked for ten years on the people of Eastern Bengal, but his researches were limited to the district of Dacca, and his modesty deterred him from publishing the results himself. It was accordingly decided to organise the inquiry on lines which should render it possible to enlist the assistance of persons who were interested in the subject, and were in a position to collect trustworthy information. Through the agency of the District Officers, supplemented by my own efforts, we secured the services of nearly two hundred correspondents, scattered over every district of Bengal, and communicating in their turn with an indefinite number of representatives of the tribes and castes forming the subject of inquiry. Each correspondent was supplied with sets of questions, based to a large extent on those drawn up under the authority of the Institute, and framed with the object of adapting the methods sanctioned by European men of science to the special conditions which have to be taken account of in India.

From the first, special attention was paid to the usages connected with

marriage, as effecting the internal structure of the various social groups. This brought to light the prevalence, over a large area, of a system of totemism, closely connected with exogamy, and displaying only faint traces of the religious element which is conspicuous in other parts of the world. A vast number of endogamous and exogamous groups were discovered, and their working was analysed, and the survey further disclosed the important part that is played by hypergamy in the evolution of new castes.

At an early stage of the operations it became clear that the investigation of purely social phenomena would fail to elucidate the true affinities of the population, and recourse was had, under the advice and guidance of Sir William Flower, formerly President of the Institute, to anthropometric methods. These rendered it possible to distinguish three main types—the Mongoloid, the Dravidian, and the Indo-Aryan—which had contributed, in varying degrees, to the making of the peoples of Bengal. By determining these types, we obtained a scientific basis for classifying the more important groups, and we were then in a position to assign places to the minor groups, with reference to their known affinities.

In the process of collating social and physical data, some curious correspondences between the two sets of facts came to notice. Where the Dravidian element was strong, it was found that if a series of castes was arranged in the order of the nasal index so that the caste with the finest average nose should be at the top, and that with the coarsest at the bottom of the list, the gradation thus arrived at corresponded substantially with the accepted order of social precedence. It sounds paradoxical to say that, in certain localities, social status varies with the mean relative width of the nose, but there can be no question as to the fact, and the reason is plain. The proportions of the nose are the measure of the infusion of Dravidian blood, and the Dravidians rank at the bottom of the social scale. In the Himalayan region, a similar correspondence was observed between the orbito-nasal index and the social position of certain tribes, those with the lowest index having the largest intermixture of Mongolian blood, and taking the lowest place in the caste system. Nor were these the only points in which the two sets of observations—the social and the physical—bore out and illustrated each other. In the Chutia Nagpur country, and in Western Bēngal, where totemism was most prevalent, totemistic exogamous divisions were found to be associated with a high nasal index, and to disappear gradually with the change of physical type, until in the higher ranks of the system, the exogamous groups bore the names of the eponymous saints and heroes characteristic of Aryan traditions. There is, however, a tendency, as tribes become absorbed in the Hindu system and adopt Hindu standards of respectability, for the totem names to be abandoned and more distinguished designations to be adopted. Thus we found castes with a mixed assortment of exogamous group-names, some totemistic and others eponymous, pointing to a gradual evolution, under the pressure of social conditions, in the direction of what was deemed to be the superior type. To adopt a set of eponymous

group-names is the Indian analogue of going to the Herald's College for a pedigree and crest.

The survey gained much in system and completeness from being based upon the returns of the census of 1881. This made it possible to assign to each correspondent particular cases for inquiry, and incidentally led to curious discoveries. There was found, for example, in Orissa a small caste, called Chattr-Khâi or "Kitchen-eater," consisting of people who lost their caste in the famine of 1866 because they were driven by hunger to eat food cooked in relief-kitchens or Chattras. These unfortunates, being cut off from the social system in which they had been brought up, and disabled from contracting marriage in the ordinary way, had formed themselves into a new caste under the pressure of necessity. But in doing so they had conformed as closely as possible to the standard principles. Although the entire caste bore the name Chattr-Khâi it was rigidly divided into two sub-castes—an upper and a lower—and intermarriage between the members of these was prohibited. The higher group comprised Brahmans and members of those castes from whom a Brahman can take water; the lower group was open to all castes ranking below these in the social scale. The caste was a small one, and had it not been for the scrutiny to which the census returns were subjected by the local correspondents under my supervision, its existence would probably never have been brought to notice. As it is, it stands out as a remarkable illustration of the tenacity and adaptability of the caste instinct—qualities which go far to account for the persistence of the system under very varying conditions.

Side by side with the work of the correspondents, independent researches were carried on as occasion offered. One of the most interesting of these was concerned with the Maghaya Domis, a reputed criminal tribe, whose identity with the European Gypsies has been surmised on the ground of the philological affinity between the names Dom and Rom or Romany. I found a number of these people in the Central Jail at Buxar in Behar, where they were serving long terms of imprisonment for burglary. Under these conditions they found it a welcome relief from penal labour to squat on the floor of the jail office and rehearse for me the ritual ordained for observance by those who go forth to commit a burglary; and as several batches of them, brought in one after the other with no opportunity for consultation, performed this weird ceremony in exactly the same way, there is no reason to suppose that they improvised it for my edification. The object of veneration on these occasions is Sansâri Mâi, whom some suppose to be a form of the goddess Kâlî, but who seems rather to be the Earth-mother known to most primitive religions. No image, not even the lump of clay so often used to symbolise Deity, is set up to represent the goddess: a circle, one span and four fingers in diameter, is drawn on the ground, and smeared smooth with cow dung. Sitting in front of this, the worshipper gashes his left arm with the curved Dom knife, and daubs five streaks of blood with his finger, in the centre of the circle, praying in a low voice that a dark night may aid his designs, that his booty may be ample, and that he and his gang may escape detection. The parallel

to the Roman Laverna seems fairly complete. It may be added that several of the Doms whom I saw in jail had their left arms scarred from shoulder to wrist by the assiduous worship of the tribal divinity. The existence of such a ritual is not merely curious in itself, but also suggests a conclusion of some practical value. It may well be that the professional activities of a so-called criminal tribe do not extend to the very large number of persons who bear the name of the tribe, but are confined to those who worship a particular deity, or practise a special ritual. This distinction occurs also among the Mahomedan Hurs in Sind, the criminal section of whom worship a special saint or Pir in a particular way, while those who do not worship this saint are not professional criminals. These instances are all that I know of, but the whole subject of the criminal tribes of India is extremely obscure, and it seems worth while to consider any suggestion that would simplify the problem of dealing with them by reducing its numerical dimensions.

The operations of which I have attempted to give you a brief description, embraced only the province of Bengal as then constituted. Shortly before the results were published, an endeavour was made, supported by this Institute, by the Universities of Cambridge and Edinburgh, and by the Anthropological Society of Berlin, to extend similar inquiries to the other provinces of India. It was pointed out that in India a highly organised administrative body of the most modern type carries on the work of government in constant and close contact with people whose beliefs and observances present examples of all stages and varieties of primitive culture, and who, nevertheless, show no signs either of dying out themselves or of parting with their most characteristic usages and superstitions. This state of things offers peculiarly favourable opportunities for the formation of a trustworthy record of primitive custom and tradition, which would possess high value for students of the early history of institutions. It was hoped that in all grades of the administration, officers, both European and Indian, would be found who would take a genuine interest in the investigation of social phenomena, and would be prepared to assist actively in collecting ethnographic data in addition to their official duties. The scheme suggested for this purpose was commended to the provincial governments by the Government of India, and bore fruit six years later in Mr. Crooke's admirable volumes on the Tribes and Castes of the North West Provinces and Oudh, the territories now known as the United Provinces.

These matters rested until 1901, when a further advance was made at the instance of the British Association. Lord Curzon's Government then obtained the sanction of the Secretary of State to a scheme for a comprehensive ethnographic survey of the customs of the most important tribes and castes in India, on the lines that had been followed in Bengal. The survey was to be conducted in each province under the orders of the local government, by a selected officer called Superintendent of Ethnography, who was to receive an allowance of £160 a year for carrying on the work in addition to his ordinary duties. The Superintendent was to correspond with the district officers, whose obligations were as a rule to be limited to ascertaining what persons in their district were acquainted with the religion, customs, and traditions

of particular tribes and castes, and to putting those persons in communication with the superintendent. Having thus secured a number of local correspondents, the superintendent was to furnish them with a set of questions, prescribed for general use, stating the points on which information was required. Provision was also made for the grant of honoraria for approved monographs on particular castes, tribes, or sects by persons possessing special knowledge. The scope of the survey included :—

1. Ethnography, or the systematic description of the history, structure, traditions, religions, and social usages of the various races, tribes, and castes in India.
2. Anthropometry, or measurements directed to determining the physical types characteristic of particular groups.

The material collected under the first head, supplemented by personal inquiries and by researches into the considerable mass of information that lies buried in official reports, in the journals of learned societies, and in various books, was to be worked up by the Superintendents of Ethnography into systematic accounts of the tribes and castes of their provinces in the form adopted in Bengal and the United Provinces.

The second head, Anthropometry, which requires some technical knowledge, was entrusted for the south of India to Mr. Thurston, Superintendent of the Central Museum, Madras; and for the rest of India to me. I also undertook to draw up a standard set of ethnographic questions, for use in all provinces, to determine what tribes and castes should be measured, and in what way; to settle in consultation with local governments the form in which the results of the ethnographic inquiries should be recorded; and generally to advise on all questions that might arise. To have assumed more minute control would have involved undue interference with the arrangements of the local governments, who were made responsible for carrying out the scheme.

The anthropometric branch of the survey may be regarded as complete in the sense that a considerable mass of measurements have been collected and published from time to time, and the conclusions which they suggest have been provisionally formulated. Until these conclusions have been formally examined by competent critics and the points demanding further inquiry indicated, it would be useless to accumulate further data. I may add that the measurements published by me in 1891 were taken and compiled under instruction given by Flower, Topinard, and Virchow, and that the conclusions derived from them were stated in the journal of the Institute and examined and accepted by many authorities at the time. They have since been confirmed by Sir William Turner's craniological monographs, published by the Royal Society of Edinburgh. The further hypotheses suggested by the later measurements, Mr. Thurston's for Madras, and mine for Bombay, Baluchistan, and Burma, have been developed in the report on the census of India, 1901, in the chapter on ethnology and caste in the first volume of *The Indian Empire*, and

in *The People of India*, 1908. Including the measurements published by Colonel Waddell, for Assam, and the Eastern Himalayas; by Sir Thomas Holland, K.C.I.E., for Coorg and Kulu; and by myself for Ceylon, and the Hunza-Nagar country, I think it may be said that the ground has been fairly covered by the only method applicable to so vast a population—that of selecting characteristic tribes, and measuring a sufficient number of specimens to determine the type. In conducting the later series of measurements (Bombay, Burma, and Baluchistan), I had the advantage of the invaluable assistance of Sir William Turner, whose instructions were followed throughout. Here I desire to acknowledge the admirable services rendered by Rai B. A. Gupte Bahadur, F.Z.S., who made the actual measurements and whose energy and enthusiasm led him into the deserts of Mekran on the west and the Shan States on the east in quest of subjects.

It was the intention of Lord Curzon's Government that the ethnographic portion of the survey should be finished in about five years at a cost of £10,000. Its completion, however, has been retarded, partly by the endeavours of the superintendents to make their inquiries exhaustive, and partly by administrative accidents. In one case the work was interrupted by famine, in another by the illness of the superintendent, in others again by his transfer to an appointment the duties of which left him no leisure to devote to ethnography. Nevertheless I may point to some substantial achievement and to the promise of more. For the south of India we have Mr. Thurston's seven monumental volumes, embodying the results of researches which in his case were commenced on a small scale as long ago as 1894. Mr. Anantha Krishna Iyar has published the first volume of what promises to be a most interesting work on the tribes and castes of the Native State of Cochin, on the west coast of India. Ethnographic inquiries are also in progress in Mysore and Travancore, and a number of small monographs have been produced which will form the basis of complete treatises on the ethnography of these areas.

In the case of Assam, which is particularly rich in primitive tribes, a judicious departure from the original scheme was initiated by Sir Bampfylde Fuller in 1903. He then proposed that the more important tribes should be described in a series of monographs, each to be written by an officer possessing special knowledge of the people concerned. This was approved on my advice by the Government of India, and four of the monographs have already been published:—*The Khasis*, by Major P. R. Gurdon; *The Mikirs*, by the late Edward Stack and Sir Charles Lyall; *The Meitheids*, by Mr. T. C. Hodson; and *The Garos*, by Major A. Playfair. Other monographs are under preparation, and in course of time we may expect to have a series dealing with the chief tribes of Assam on a scale which is only practicable within rather narrow limits.

The ethnographic survey of Bombay was organised on an excellent system by Mr. R. E. Enthoven, who conducted the census of 1901. The assistance of the vernacular schoolmasters of the Presidency was enlisted, small honoraria being given to those whose reports contained material of special value. Information was also collected through special correspondents, some of whom travelled in particular

areas, and drew up notes giving the results of their inquiries. The results have been compiled in the form of a number of short monographs, which will serve as materials for comprehensive treatment of the subject.

For the purpose of the survey, the United Provinces has been combined with Rajputana, and entrusted to Mr. R. Burn, who carried out the census of the United Provinces in 1901, and was recently employed as editor of the *Imperial Gazetteer*. A large amount of material has been collected on the basis of the instructions contained in my *Manual of Ethnography*, and in course of time we may look for a revised and condensed edition of Mr. Crooke's work and for a complete account of the ethnography of Rajputana—a region of peculiar interest both for its own sake and by reason of the influence that it has exercised on social evolution in other parts of India.

In the Punjab and the North West Frontier Province the Ethnographic Survey has been carried on by Mr. H. A. Rose, who conducted the census of 1901. All tribes and castes of importance have been investigated, but some work still remains to be done in the way of clearing up obscure points and reconciling discrepant statements. The compilation of an Ethnographic Glossary on the standard model was commenced more than two years ago, and considerable progress must have been made since then.

Mr. Russell, who is now in charge of the survey in the Central Provinces, collected information, on the lines indicated in the *Manual of Ethnography*, regarding nearly all of the 240 tribes and castes recorded in the census of 1901; and draft articles or notes dealing with most of these have been compiled, which will furnish material for an ethnographic glossary. Extensive inquiries have also been made in Burma, by Mr. C. E. Lewis, and the results of these are in process of compilation, in the form of draft articles, which will eventually be put together in a glossary.

Although the finished and complete results of the survey have only been published for one province, good progress has been made in the collection of materials on systematic lines for the rest of India. Even if some time elapses before these materials are worked up, they will still have served the essential purpose of recording primitive usages which the advance of civilisation tends constantly to modify or efface.

Let me now turn to the question raised in the opening sentences of this address. How far are the methods followed in India, suitable for general application; does the Indian experience hold good for countries where the administrative arrangements are of a less advanced type? To some it will perhaps seem that the Indian conditions are too special to afford any guidance to inquirers working without the aid afforded by an exhaustive census of the population, by full knowledge of the language and ample facilities for procuring trustworthy interpreters, by the existence of a large body of literature bearing on the subject, and by the presence of a large number of experienced officials. No doubt these invaluable adjuncts of research are not to be found in every place where primitive peoples are

brought under investigation. But where there is any sort of organised government, their introduction is merely a question of time, and efforts towards it are constantly being made. Where a regular census is impracticable, estimates based on the number of fighting men, the number of houses, the extent of cultivation, and so on have probably been framed; individuals have studied the languages and recorded their observations in grammars and glossaries; if there is no literature, tribal traditions must have been transmitted from father to son, and the officials must at all times be anxious to extend their knowledge of the people, and to form a record of customs which may some day serve as the basis of legislation. Given these conditions, the system of working by questions is bound to yield good results. It ensures that a number of independent observers shall have their attention drawn, to some points, and that full play shall thus be given to the application of the comparative method. It is also the best means of enlisting the co-operation of the local officials and creating a wholesome rivalry between them.

On the whole then, I venture to think that the Indian methods are worthy of the consideration of practical workers in the field of ethnology, especially as regards the internal structure of tribes and the investigation of physical characters. If you know the framework of a society and the predominant type of its members, you have laid a sound foundation for more detailed inquiries. That I think is the answer to anyone who considers the Indian methods too elaborate for practical use. There is, however, another criticism that may be foreseen. It may be said that these methods, so far from being too elaborate, were not elaborate enough, and that they are indeed superficial and inadequate. I readily admit that the criticism is well founded. If we compare the results of the Indian Survey with those obtained by Messrs. Spencer and Gillen in Central Australia, or by Dr. Rivers among the Todas, we must admit that the Indian operations fall far short of the high standard of research attained by these observers. But how much ground should we have covered if we had worked in India on their lines? Was it not better to realise that a survey is a survey, and that its primary purpose is to demarcate the field of observation, and to indicate the openings for more exhaustive forms of research? That is what we attempted to do, to give a general view of the Ethnography of India, leaving it to others to fill in details as time and opportunity may serve. If we have prepared the way for the writers of exhaustive monographs we may claim to have done useful work, which will be superseded bit by bit as more elaborate methods are brought into play.

In conclusion I wish to acknowledge the great obligations that I am under to Mr. T. A. Joyce, the Honorary Secretary, and Mr. H. S. Kingsford, the late Assistant Secretary of the Institute, who, I am glad to say, has now joined us as a Fellow. Their advice and assistance have always been at hand to supplement my limited experience of the business of the Institute.

NOTES ON THE CUSTOMS AND BELIEFS OF THE WA-GIRIAMA, ETC., BRITISH EAST AFRICA.

BY CAPTAIN W. E. H. BARRETT, Assistant Native Affairs.

[INTRODUCTORY NOTE BY C. W. HOBLEY, C.M.G.]

THE Giriama people inhabit a strip of country commencing some ten to fifteen miles inland from the east coast between Kilifi and the Sabaki River. They are, as far as is known, a pure Bantu race, and very closely resemble the Wa-Duruma and Wa-Diga who live further south. Like the Duruma people they erect monuments at the graves of their relatives and these are often anthropomorphic in character.]

Marriage, etc.

WHEN a father considers it is time his son married, he tells him to look for a wife. The young man will look about for a suitable girl, and when he has found her informs her eldest brother that he wishes to marry her. He will then proceed to the brother's house accompanied by two or three of his male friends. The girl is sent for and arrives with two or three girl friends. Her brother asks her if she wishes to marry her suitor. If she declines the honour the matter is finished.

If the girl consents, the suitor for her hand will return to his home. For the next three days he will come and see her, both his friends and hers being together with them. On returning home the third evening he will tell his father that he wishes to marry a certain girl, tells his father her name, and asks him to take some *tembo* (beer) to her father and arrange matters.

The following morning the old man will proceed to the girl's father's house, taking with him a small gourd of *tembo*, and handing him the *tembo*, tells him the object of his visit. The recipient places the *tembo* in an earthen cooking pot, and then sends for his daughter. On her arrival he hands her a small drinking bowl (*mboko*) and asks her if she wishes to marry the young man in question. If she now declines to do so, the *tembo* is returned to the suitor's father and the matter is finished. If she consents, her father tells her to dip her *mboko* into the *tembo* and to drink.

She takes a sip at the *tembo* and hands the *mboko* to her father, who again asks her if she is sure that she wishes to marry.

If she says "No," the matter ends here, and the *tembo* is returned to the suitor's father. If she consents to the marriage she quits the house, and leaves the old men together. At this conference other elders are also present, friends of both parties.

After the girl's departure the old men drink the *tembo* and eat food, which her father had prepared for them.

Three or four days later the father of the young man takes two or three more gourds of *tembo* to the girl's father, which is drunk by them and their friends.

After a few days he takes one more gourd of *tembo* to the girl's father, and this is drunk by those present. On this occasion before going home the suitor's father will leave with the father of the girl a knife, hoe or other article, saying that on such and such a date he will bring the property to be paid for the daughter. On the day named by him he brings the property agreed upon, and hands it over to the girl's father. After a few days he will bring one or two more gourds of *tembo*. A few days later he brings one gourd of *tembo*; when this has been drunk by those assembled, he informs the girl's father that he now wants his son to be given his bride. The girl's father now gives some small article to the suitor's father, and tells him that on such and such a day he will hand over his daughter. The evening before the day arranged the suitor will proceed to his sweetheart's village, and that night he will sleep there. Early the next morning the bride is handed over to her husband by her father. Before she leaves her father's village, the old man spills a little *tembo* on the ground and tells her to obey her husband in all things; afterwards sipping a little water into his mouth he spits it over her. His daughter then puts her lips up to his, and he lets a little water run from his mouth into hers; this is said to bring her luck in her married life. This ceremony finished the bridegroom takes his wife to his house, and their friends go with them. The bride is clothed from her shoulders downwards in a long red or black cloth. The bridegroom must always appear in person to take his bride; he cannot be represented by a proxy.

The day after the marriage the husband kills a goat, and cutting off a piece of skin from its forehead, makes it into an amulet and gives it to his wife, who wears it on her left arm. The flesh of the goat is then eaten by those present, and a great deal of *tembo* is drunk.

The total amount of *tembo* given to the father of the girl for her hand in marriage is fifteen gourds (*kiama*). Only a certain number, however, are given before the marriage, and the balance may be paid at any time. In the event of a woman deserting her husband, he must pay up any balance of the fifteen *kiama* there may be remaining before he can claim the children of the marriage.

The sexes are not allowed free sexual intercourse with each other before marriage as in some tribes. Many of the women have male friends, but this is unknown, as a rule, to their husbands. If a man is caught committing adultery

with another man's wife, he must pay up a fine of ten goats to the injured husband. Friends sometimes make an agreement which allows them to sleep in each other's houses, and with each other's wives. All of the parties, however, must agree to this. It sometimes happens that the wife of A is willing to sleep with B, but the wife of B objects to sleep with A. The friendship between A and B is promptly broken off, as it is considered to be dangerous to be friends any longer. These agreements are made after, and not before marriage.

Wives are obtained by purchase, and a man is allowed to have as many wives as he can afford to buy. A man likes to get as many wives as possible, as they work for him and bear him children. The main object of every Giriama is to have as many children as possible. A man cohabits with his wife immediately after marriage. Men abstain from cohabiting with their wives during menstruation. In the event of the death of relations of either party, they will not cohabit until the seven days of mourning (*hanga*) are passed. Also for twelve days after a woman has borne a child.

During war time men do not cohabit with their wives, as they say it brings bad luck to them. They believe that if they do cohabit with their wives during war time that they will be unable to kill any of their enemies, and that if they themselves receive a trifling wound it will prove fatal.

Husbands sometimes exchange their wives, but the women must agree to this. Any children born before the exchange took place are the property of the first husband. If the woman is *enceinte* at the time of the exchange, the child, after it has been born and weaned, will be returned to the first husband.

Women do not as a rule hold conversation with their father-in-law, as it is considered that they have nothing to talk to him about. If she has any complaints to make against her husband she makes them to his mother. A husband converses with his mother-in-law about his household affairs. No restrictions are placed on the social intercourse of brothers and sisters.

If a child is born feet foremost, it is smothered. The reasons given for this practice are that if the infant is permitted to live, their crops will all wither up from drought, their cattle will die, and many other evils befall them.

In cases where a child's parents die, and he has no known relations living, he will be adopted by other people, and is looked upon as their child.

Blood relations are not allowed to marry. The reason given for this prohibition is that it would create quarrels in the family. Members of the same clan are also forbidden to marry.

All males are circumcised, some as infants, others as boys, and others wait until they reach the age of manhood. When several youths are circumcised at the same time, a number of goats will be killed and a big feast held. For seven days after they have been circumcised, the patients will sleep out in the bush near their village, a roof of boughs and grass having been erected to shelter them from the sun and rain. Food is taken to them by their mothers. The severed foreskin is thrown away.

Sometimes one sees women with small scars cut on their stomachs. These scars are said to add to their beauty.

The usual price paid for a wife is five head of cattle.

Death, murder, burial, etc.

If an apparently healthy person dies suddenly, the relations of the deceased will go to an *mganga* (doctor) and ask him if death was due to natural causes or otherwise. If the *mganga* after making medicine decides that deceased has been killed he will name a certain person as the murderer. This individual is promptly seized by the relations of deceased, and ordered to pay up *koreh* (if deceased was a male he must hand over two males, if a female he must hand over two females) to them. If he denies his guilt, he has to go through a test called *keraho cha fisi*. The *mganga*, accompanied by another man, proceeds into the bush and collects the roots and leaves of the *mbareh*, a small shrub. When they have gathered sufficient they return, and placing the roots and leaves in a *kinnu* (= mortar) (wooden receptacle used by women for breaking up corn in) pour water on them and smash them up with a pole. When the juice from the roots and leaves has become sufficiently mixed up in the water, the mixture is poured into a *kifuvu* (coconut shell) and given by the *mganga* to the accused to drink, at the same time telling him that if he is innocent there is no danger in drinking, but that if he is guilty he will die. If accused declines to drink he is killed by deceased's relations, sometimes by strangulation, and at others by arrow or knife.

If a female child dies within three days of birth, or a male child within four days of birth, or a child is still-born, the corpse is buried in the house under the place where the water bowls stand. All other persons with a few exceptions are buried in the village not far from the house where they died. When anyone dies, all ornaments, etc., are taken off the corpse, which is then washed in cold water, if a male by his brother, if a female by her mother or grandmother, and the head is shaved by a friend. The corpse is then clothed in new garments, and afterwards entirely wrapped up in a white cloth. It is then placed on a mat and carried to the grave which has been dug to receive it.

Males are placed in the grave lying on their right side, and females lying on their left side. Only one corpse is placed in one grave.

Monuments raised in memory of the dead by the Wa-Giriana are of two kinds :—

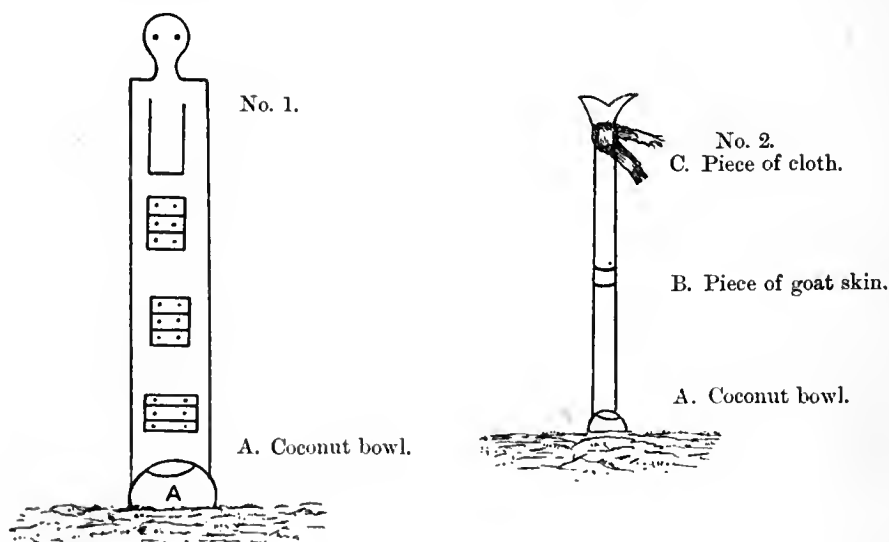
- (1) *Vigango*, which are figures which are carved out of flat pieces of wood about 2 inches thick, and about 5 feet in length and 9 inches in breadth.
- (2) *Koma*, which are short pieces of stick.

These monuments are sometimes placed in an upright position at the head of a deceased's grave, and at others are placed in some prominent part of the village. A coconut bowl is placed at the foot of each and in front of it.

No. 1 is only used if a rich man, or one of his relations have died, and on the day on which it is erected a large feast has to be held, and several sheep or a bullock killed. These animals are killed close to the spot on which the monument stands, and their blood is allowed to flow into the coconut bowl, and on to the figure itself; *tembo* (beer) is also placed in the bowl.

No. 2.—If the relations of the deceased are too poor to afford a big feast, they plant a short piece of stick in the ground and tie a small piece of cloth round it, placing a coconut bowl at its foot. A small feast is held and one or two fowls killed, the blood running into the bowl and on to the *kikango*. Some *tembo* is poured into the bowl, as in case No. 1.

These monuments are said to represent the deceased.



If at some future date any of the dead person's relatives are taken ill, they go to a witch doctor, who sometimes tells them that their sickness is due to the fact that the *koma* (ghost) of one of their deceased relations is hungry. A goat is then killed close to his or her monument as the case may be, and the blood flows into the coconut bowl. *Tembo* is then placed in the bowl. This is done to appease the ghost of the deceased. A piece of skin from the head of the goat is then tied round the monument.

Always before drinking *tembo* in the village where a monument stands, the deceased's relations will place a little of it in the coconut bowl at the foot of the *kikango*.

Suicides are buried in the same manner as other people.

If a man is killed when away from his village, he is buried near the spot where he died.

Women will sometimes, after deserting their husbands, kill their children to avoid having to hand them back to their father.

The Wa-Giriana say that suicides among both men and women occur at intervals. The women hang themselves with the cord which they have used round their waists to support their *marinda* (short skirt).

Corpses are carried out of the house through the door, and no special opening is made in the house for carrying them through.

The ghosts of the departed are feared, and it is to propitiate these that *vigango* and *koma* are erected, and a coconut bowl placed at their feet, into which *tembo* and the blood of slaughtered animals and fowls are poured. These offerings are made in order to prevent the ghosts of the departed from bringing ill-luck on the village.

If a man dies, his relations stop in his house for five days after his death, and if a female dies, her relations stop in her house for four days after her death. Food, water, etc., is brought to them by their friends. They are of course allowed out for purposes of nature.

If a wife dies, her husband wears new white cloth for one month, and puts no grease on his body for that period.

If a husband dies, his wife wears a new white *marinda* (female dress) and puts no grease on her body until she marries again.

Persons who have handled a corpse are not regarded as unclean, but they wash their hands before eating food for the first time, after handling a dead body.

The Wa-Giriana do not believe in any form of resurrection. If one man murders another he must pay up *koreh* to the relations of the deceased (two males if deceased person a male, and two females if deceased person a female). If he refuses to do this he is killed by deceased's relations, or one of deceased's clan. If a murderer escapes, one of his clan is killed. This brings about a fight between the two clans, which is eventually stopped by the elders on both sides meeting and settling the dispute.

A man who has killed in war a man of another tribe, such as Masai or Galla, always uses his left hand to pass his cup to his lips when drinking *tembo*.

Property, inheritance, slaves.

Each man places a boundary mark round his *shamba* or plantation. Sometimes a boundary consists of a path, at others small sticks, etc., are put down to mark the boundary.

On the death of a man his land belongs nominally to his eldest son, but in reality all the sons have an equal share in it. They all work the land, and the produce from it is equally divided amongst them. In case of a quarrel amongst them, the land is equally divided up and each takes his share. If a man dies leaving no sons, his land is divided up amongst his brothers. Women are not permitted to inherit any property except ornaments left by their deceased relations. If a man dies and leaves only a son, who is a child, the eldest brother of the deceased takes over his brother's property and looks after it until his nephew is old enough to look after his own affairs. When the day to hand over the property

arrives, the corn, etc., in the village obtained from the *shamba* (plantation) is divided up amongst those who worked it. The *shamba* is then handed over to the son of deceased. All profit made on the *shamba* before this date goes to the people who worked it.

A *shamba* always remains the property of the man who first started it unless he sells it. Even if he deserts it for many years it still belongs to him, and if at any time he hears that someone else is working it, he can go to that person and order him to pay for the land, or else leave it alone. Forest or bush is anybody's property, and all have grazing rights there. *Shambas* are sold according to their size. Relations living in the same village, as a rule, all cultivate one *shamba*. The value of a house for a husband and family is Rs. 4 or Rs. 5 according to its size.

As a protection against the theft of crops, medicine is planted there; it is called a *kiapo*, or oath.

On the death of an elder, his slaves used to be given the choice of becoming the property of any of the deceased's sons they preferred. The majority of slaves were formerly bought from Arabs and Swahilis. Children from parents, one of whom is a slave, have the same status as any other children.

Food, stock, etc.

The chief crops to be found in the Giriama country are:—*Mohindi* (Indian corn), *mawele* (millet), *wimbi* (eleusine), *kunde* (beans), *mtama* (sorghum), *sim sim* (sesamum), *pojo* (pulse), and *mpunga* (rice). Numbers of Wa-Giriama grow coconuts.

Males and females are both allowed to eat the same kinds of food. Both are permitted to eat anything they fancy except in certain cases of sickness, when the *mganga* forbids certain foods.

Grain, etc., is stored on wooden platforms (*lutzaga*) built in the house, and fires are usually lighted under these to prevent the stores from getting mouldy.

The Wa-Giriama do not appear to possess a large quantity of cattle, but have a fair number of goats and sheep. They also keep fowls, and in many villages ducks are to be found. It is only at very important feasts that cattle are killed, for minor feasts goats and even chickens are killed. Numbers of Wa-Giriama will not eat sheep when suffering from a disease called *safura*, as they say that the flesh of sheep increases the sickness. The manner of killing the stock is by cutting the throats. Cattle are tended by males, but are milked by both males and females.

The Wa-Giriama have no objection to selling their milk to strangers. They themselves drink both fresh and sour milk, and do not boil it. Cattle are known by cuts on the ears, and by brandings on the body. The Wa-Giriama do not object to [the young of] an animal serving its own mother if necessary. They do not consider that the progeny will be weaklings.

The Wa-Giriama are extremely fond of drink, and make *tembo* (beer) from the coconut palm, *mkoma* (hypharnee palm), *wimbi* (honey, sugar-cane), *mtama* and *mohindi*. They prefer the *tembo* made from the coconut palm, as it is the strongest.

When several men go hunting together the hide and horns are the property of the man first wounding the beast. The meat is divided up amongst them. If an elephant is killed the man who first wounded it takes one tusk, the other is sold and the money obtained divided up equally among the other hunters.

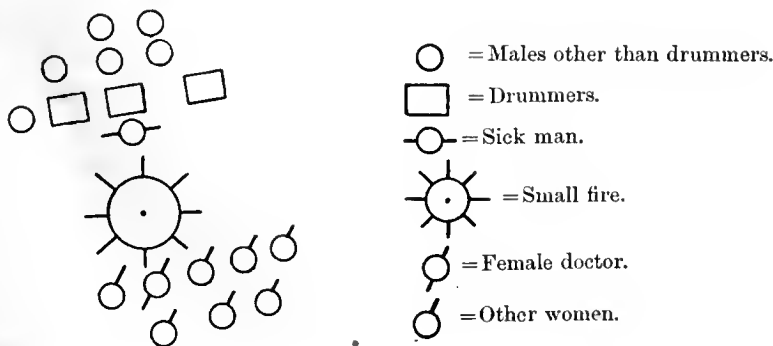
Husbands and wives eat together, but male children eat with their father and female children with their mother. Cannibalism is not practised. When a bullock or goat is killed, its blood is collected in a bowl, and then placed in a cooking pot and cooked with the flesh of the animal. The cooked blood and meat are eaten together.

The Wa-Giriana seem to be very fond of their dogs, which in the majority of cases appear to be well fed. Often one sees these animals decorated with bells, or collars made of sheep skin. They say the dogs are very useful to them in keeping monkeys and other animals away from their crops. One also frequently finds cats in the villages.

Fire.

Fire is produced by friction made between two sticks, one hard (*mukerindi*) and one softer (*mulumeh*). Both these sticks are obtained from the *mukerindi* tree, but the one called after the tree is hardened in the fire, and the *mulumeh* is only dried in the sun. A hole about $\frac{1}{4}$ inch in diameter and about the same depth is bored in the *mukerindi* fire stick, the point of the *mulumeh* is then placed in the hole, and friction obtained by twisting the latter round backwards and forwards between the palms of the hands until fire is produced. Fire is made by any male capable of making it.

Dance held to cure a person possessed of a devil.



The sick man said to be possessed of the devil sits down near a small fire, his entire body hidden by a large white cloth. Sitting near to him are the drummers and his male friends; on the opposite side of the fire sits a female witch doctor with a number of other women. If witch doctor is a male he sits with males. The drummers beat the drums, and the remainder of the people chant; for some time the sick man remains perfectly still but after about half an hour or so his head begins to sway about, and he starts trembling, at first slightly, and then violently.

After a very violent fit of trembling and shaking about, the drumming and chanting ceases, and the white cloth is removed from the patient, and a white *kanzu*, white sleeveless coat and white cap are placed on him; this is only done if the devil inside him is said to be a Swahili one. Drumming and chanting then start afresh, and the patient then starts his trembling fits again. After a short while the drumming ceases, and the witch doctor comes and sits in front of him and converses with the devil, asking it what it wants. If it asks for anything such as goat or fowl, they are brought and presented to it. Finally, the devil is said to be driven out of the patient, who then rises and dances wildly about in front of the drummers, waving a knife, which is handed to him by one of his friends. The dance is then continued until all become tired, when they retire to their respective houses.

Sometimes, when one devil has left a person, a devil of another tribe, such as Somali or Barawa, enters him, and the same procedure is gone through as with the first. Different clothes, however, are placed on the patient for the different devils. For instance, a red *tarbush* (fez) bound round with cloth will be placed on his head if a Barawa devil has entered him.

Mehele dance.

Figure No. 1.—The dancers, male and female, move slowly round in a circle, one behind the other, men forming one-half of the perimeter of this circle and women the other half. They move as follows:—The left foot is advanced about six inches and the right foot is then brought up to it: during this figure the arms are swung backwards and forwards, keeping time with the movements of the feet, and the knees are bent. Drums are beaten the whole time. When the dancers get tired they break off and form up for Figure No. 2.

Figure No. 2.—The women line up together, and the men line up facing them, a few feet away. Drums then start beating, and the women advance with the same step as in Figure 1. When they reach the men they start retiring by drawing back the left foot about six inches, and then drawing the right back to it. While the women are retiring, the men advance in the same manner as the women advanced. After retiring a few paces the women stop and allow the men to catch them up. On reaching the women each male rubs his lips or cheeks against the forehead of the woman opposite to him. The women then retire again, and the men advance. On reaching the place where they first lined up the women halt and the men retire. After a few moments' pause the women advance again and the same procedure is adopted. They continue to dance until they get tired.

NOTES ON THE WA-SANIA.

[INTRODUCTORY NOTE, BY C. W. HOBLEY, C.M.G.]

THE Wa-Sania are of the aboriginal tribes of East Africa, and I believe it may be safely asserted that their origin is unknown. They are dotted about the flat bush country, some distance inland from the N. bank of the Sabaki to about the latitude of Port Durnford; this area was formerly occupied by the Gallas, and the Wa-Sania fell into the position of serfs to them, and some still owe allegiance to Galla families to this day. During the last fifty years, however, the Somalis have pushed the Gallas southwards, and it is alleged that numbers of the Wa-Sania have allied themselves with the invading Somalis.

Their customs reflect their long association with the Gallas, and it is hoped that further research will bring to light some trace of their abandoned language, as this might give us some clue to their descent.

Captain Barrett gives a few of their folk tales, and in Nos. 4 and 5 our old African friends, the hare and the chameleon, turn up again as cunning as ever.

Story No. 6 bears a close resemblance to one I discovered among the A-Kamba and published by the Cambridge Press, but the part of the Ndundu is played by the tortoise.]

The Wa-Sania are divided into the following clans:—

Gulu.	Mundoyu.	Kujega.
Sabali.	Illani.	Arusi.
Agudeh.	Wayu.	Gullug.
Gamado.	Kariu.	Menta.
Sunkana.	Irdid.	Buddi.
Hujejh.	Bolazu.	Nurtu.

Of these the most important is the Gamado, followed by the Illani and Gulu, the remainder of the tribes are all equal to each other. At present the three most important chiefs among the Wa-Sania are:—

- (1) Bashora Burrum of the Gamado clan.
- (2) Mataida of the Illani clan.
- (3) Godana of the Gulu clan.

Formerly the Wa-Sania had a language of their own, but they now talk the Galla language, and have forgotten their own.

The Wa-Sania drink the blood of all the larger game animals they kill, such as elephants, rhinoceros, buffaloes, also that of bullocks, sheep, and goats.

Intercourse of sexes, marriage, etc.

A girl lives in the house of her father and mother until her first menstruation is over. As soon as blood shows itself the father will at once leave the house, and

does not enter it again until the menstruation is over. The girl remains in the house, and is attended to by her mother, and no male is permitted to see her.

If for purposes of nature she is obliged to leave the house, she covers her face with a cloth, so that those outside may not see her face. On the day menstruation ceases the girl's body is rubbed over with *sim-sim* oil or *samli* (ghee), mixed up with *fitoh*, *kuchiri*, *karafu* (scents bought from Indian traders), and she is given new clothes, beads, and also brass wire to wind round her arms. From that day she no longer lives in her parents' house, but in a separate house, which is occupied by other girls of her own age. She lives in this house until she marries. During the first menstruation of a girl she eats apart from the others.

When male children reach the age of about five years they sleep out in the open, except during rain, when they are permitted to sleep in their parents' house, or if they are sick, when a small house is built for them.

Before marriage the young men and girls carry on the practice of *lukh*, that is to say, the youths are allowed to insert the penis between the girl's legs and sleep with them in this fashion; but they are not allowed to penetrate the vagina. I believe that the same practice exists amongst other tribes in British East Africa. Blood relations are not permitted to marry each other.

The Wa-Sania are polygamous, but are not permitted to marry more than three wives, as it is considered that no man is able to provide food, etc., for more than this number. Wives are obtained by purchase.

When a young man wishes to marry a certain girl he will inform his father of the fact. His father will proceed to the girl's father, taking with him a *murra* (about three pounds) of tobacco and a *kuroh* (small barrel) of honey, and tell him that his son wishes to marry his daughter. If the girl consents to the marriage, the father of the suitor returns to his own house, and for some time after this continues to take *tembo* (native beer) to the father of the girl.

When her father is satisfied with the amount of *tembo* he has received, he tells the father of the suitor that he is contented that the marriage should take place. The father of the suitor now presents the girl's father with forty rupees (formerly eighty hands of cotton cloth) and six (*buckum* or *kidundu*) of *tembo*. The two fathers now arrange a date for the wedding. Early on the morning of the appointed day the women living in the girl's village will build a hut of sticks and grass, which is entered by the bride and bridegroom on the arrival of the latter. Both have previously dressed themselves up in new clothes, and smeared their bodies with *sim-sim*, or ghee, mixed with scent. The bride also takes with her a coconut-shell full of honey. The bride's friends accompany her into the house, and for several days they all sleep there. After this their friends go home and leave them together. On the eighth day the bride pours the honey from the coconut shell into an earthen cooking pot, and, having mixed it up well with water, gives it to all the children of the village.

During this time the husband does not cohabit with his wife. The husband lives with his wife's people until the first child is born, when he returns to his

father's village, taking wife and child with him. After the birth the husband must present the father of the girl with one large elephant tusk. On the day of the wedding dances and feasts are held.

Among the Wa-Sania each wife has her own house, and the husband sleeps in turn in the house of each. Men do not cohabit with their wives during menstruation, ninth month of pregnancy, or after child-birth until the child is weaned, and during hunting. They do not cohabit during the ninth month, as they say the child is likely to be killed; after child-birth until the child is weaned, as they say the milk supply of the mother will run short; while hunting, as they say the man will have bad luck, and see no animals to kill.

When a man visits the house of a friend the latter will usually permit him to sleep in one of his wives' houses if he wishes to stop the night.

On the death of a man his widows become the property of the eldest brother of the deceased. If this brother has already three wives, he will hand the women over to other men; but any children born by these women are his property.

Women and children are well treated as a rule. If a wife is ill-treated by her husband, her father, or other male relations, will take her away from him. She will be handed back to him if he brings her a present of *tembo* for her relations and promises not to ill-treat her in the future. If a wife deserts her husband her father does not return any property he has been paid for her; but if she re-marries, her new husband must pay to her former husband the same amount of property as he (the former husband) originally paid to her father for her. If she does not marry again, any children she bears are the property of her husband.

Old people are treated with respect.

During the period of menstruation a husband may sleep in the same house as his wife, but must not cohabit with her, as the Wa-Sania believe that if a man cohabits with a menstruous woman he will become weak.

Birth.

Children are much desired by the Wa-Sania. About one month after a female child is born the edges of the child's pudenda are cut by a woman with a *kardu* (razor). The raw edges are then placed together, and the child's legs are tightly strapped together so that the raw surfaces of the parts grow together, leaving only a small hole to allow the child to micturate. When the flesh has become united, the child's legs are untied.

After the birth of her first child the mother remains in her house for three weeks, only leaving it for purposes of nature. When it is necessary for her to leave her home she covers her face with a cloth. After the birth of other children, say the second and third, the mother remains indoors for two weeks. She will, however, remain indoors for seven days only after birth of any children after the third.

During the period of seclusion after the birth of a child the mother eats only honey mixed with hot water. During this time the husband does not live in the house, but with a friend or with another wife. The mother is looked after by one

of her female relations. On the day the mother leaves the house after the birth of a child a dance is held, but the dancing is not accompanied by feasting. On this day the infant is named. The first male child born is named after the grandfather on his father's side, and the first female born is named after her grandmother on the father's side. The second male born is named after the eldest brother of the grandmother on the father's side. The second female born is named after the wife of the eldest brother of grandmother on the father's side. The third male is named after the eldest uncle on the father's side. The third female is named after the eldest aunt on the father's side. If the father has no brothers or sisters the third male will be named after the eldest brother of the mother; the third female will be named after the eldest sister of the mother.

The child's head is shaved on the day that the navel string separates from its mother. The navel string is then tied up with freshly cut hair from the child's head in a cloth worn by the child, and is left there until the day the child can walk. On that day the navel string and hair are taken by the child's father and thrown into a running stream. Children born feet first are taken out and left to die in the bush.

Children are suckled for about a year. If the mother dies, it will be handed over to one of the mother's female relations to suckle. When the child is weaned the father will give a present of cloth to the woman who has weaned it.

Males are circumcised when they reach the age of three or four years. They are circumcised by a *kiriz* (doctor), and much *tembo* is drunk on the circumcision day. After the operation the patients remain in the house until they have recovered, and for the first seven days are given honey mixed with a very little water.

The Wa-Sania do not chip, file, or take out their teeth unless suffering from toothache, when the painful tooth will be extracted.

Males have one small hole bored in the lobe of each ear when about two and a-half years old. At about the same age females have one hole bored in the lobe of each ear, and also one at the top of each.

Property.

Every clan has its particular mark for the identification of property, and each member has in addition his own private mark. They are very particular in putting both marks on their arrows, so that in the event of their wounding a beast which afterwards died, everyone who saw the arrow sticking in it would know who had killed it, and in consequence whose property it was.

If a man wounds an elephant which subsequently dies, and another man finding the dead beast steals the tusks, the man whose property the tusks really are, will, if he hears of the theft, go to the thief and tell him to hand over the stolen property. If he denies the theft he must go with the accuser to the place where the elephant died, and placing his right hand on its skull, say, "If I have stolen the tusks which belong to the accuser, may I die." The Wa-Sania are very afraid

of taking this oath, so the thief rather than take it usually hands over the stolen property.

A person finding a dead elephant with an arrow of another man's in it will report the fact to him, and receives a reward which varies from two rupees to twenty, according to the size of the tusks. The flesh of the dead beast is common property.

The man firing the first shot into an elephant keeps one tusk if the beast is eventually killed, the other is sold and the proceeds divided up amongst the remaining hunters.

Property descends to sons, the elder ones getting a larger share than the younger. If there are no sons the property would all go to the eldest brother of the deceased. Women are not allowed to inherit property.

Formerly the Wa-Sania owned slaves, who were bought from the Arabs. These people, however, were treated more as friends than slaves, and freely intermarried with the Wa-Sania. Children by parents, one of whom was a slave, have the same status as other children.

Fire.

Fire is produced by friction made between two sticks, one hard and the other somewhat softer. A hole about $\frac{1}{4}$ inch in diameter is made in the hard stick and the point of the softer one is then placed in it, and friction made by twisting the latter round backwards and forwards between the palms of the hands until fire is produced. The hard fire stick is called *funyuo*, and the softer one *nahum*; both are obtained from the *hoheh* tree.

Food.

Wa-Sania do not eat fish or any carnivorous animal, neither do they eat baboons, monkeys, ostriches, or the stomach of the elephant or rhinoceros. Women are forbidden to eat pig or zebra. They do not store food for future use, and in consequence are frequently hungry.

They drink *tembo* prepared from honey, and from the juice of the hypharnc or borassus palm. They also buy *tembo* made by Swahilis and others from the coconut palm.

Men and women eat separately. Male and female children eat together until they are about two years old; the boys will then eat with their fathers and the girls with their mothers.

Death.

When a person dies the corpse is washed in cold water; if a male by a male of the same age as deceased, and if a female by a female of the same age. The above only applies to grown up people. If a child dies, a grown up person of the same sex will wash the corpse. After the corpse is washed it is wrapped up in a white cloth and laid on a grass mat; it is then carried by men to the grave which has been prepared for it in the bush near the village. The grass mat is laid

at the bottom of the grave and small upright sticks are driven into the ground and close together round its edges; the corpse is laid on this mat and covered over by another mat. Earth is then filled in. Before the burial all the ornaments of deceased are taken off the body. Men are buried lying on their right side and women on their left.

If a child is stillborn or dies before it is eight days old it is buried in the house by the women; males do not attend its funeral. Female children under eight days old are buried in the left half of the house as one enters the door, and males on the right half.

On the death of a child seven days' mourning are observed, but for an adult days of mourning vary from two to seven. During days of mourning for a wife and until he re-marries, a husband will wear round his neck the bead ornaments formerly worn by his wife, and does not grease his body. During days of mourning for a husband a widow will wear his bow string tied round her neck, and does not grease her body.

If an adult person dies in a house the house is broken down. Formerly the whole village was deserted, but in these days the occupants remain in it. After handling a corpse a M'Sania will wash his hands. Immediately after a burial all the males present will wash their hands and feet. On the day on which the period of mourning finishes, the males of the village have their heads shaved. The Wa-Sania do not believe in any form of resurrection. Persons killed by wild animals in the bush are not buried, as they say that if the corpse is buried many more of them will be killed in a similar manner.

Murder.

If a man kills a man he must give one female to the relations of the deceased; if a female is killed two females must be given to the relations of the deceased. If the murderer refuses to pay up he is killed in the same manner that he killed his victim. If a wife commits a murder and her husband refuses to pay up the fine, he is killed, the woman is not punished. If a man escapes after committing murder and gets away altogether, his nearest male relation will be called upon to pay up the fine; if he refuses he is killed. If the murderer has no male relations his clan will be called upon to pay the fine; if they refuse, one of their male members is killed by members of the clan of the deceased. If a murderer pays up the fine he will buy a sheep and kill it. A feast is made, which is attended by the male relations of deceased and others. As soon as the animal is killed, its stomach is cut open by the murderer. All those present of the murderer's clan and of the clan of deceased will dip their left hands into the blood in the sheep's stomach, and each clan will sprinkle blood over the members of the other.

Blood Brotherhood.

The Wa-Sania only make blood brotherhood with the Wa-Giriama. A goat is brought by one of the parties to the spot where the ceremony is to take place.

The Giriana will seize it by the hind legs and the M'Sania by its forelegs and the father of one of them will cut its throat with a knife. If neither of them has a father living, the goat will be killed by the head Giriana present.

The contracting parties now sit down opposite each other and each man will make two cuts on the breast bone of the other with a knife so that blood flows. In the meantime the man who killed the goat has taken out its liver and is roasting it at the fire. When the meat is slightly cooked he cuts off two pieces from it and hands one to each of the contracting parties, who take it and rub it in the blood on their own chest. Each of these will now hand his piece of meat to the other and promises to help him in everything, and in future to look upon him as his brother. Each eats the meat smeared with the blood of the other, and the ceremony is finished.

Chieftainship.

The Wa-Sania are governed by one principal chief, and chiefs over each clan, the former being a member of the Gamada clan. On the death of the chief the chieftainship will descend to his eldest brother, or to his eldest son if he has no brother. If the chief is a minor the elders will elect a man to look after affairs until he becomes a man. A chief is assisted in his councils by his elders, but it is he who finally gives a decision on any matter.

The successor to chieftainship will take over his duties at the first waning of the moon after the death of the former chief. On this day he wears a *kitambi* cloth from his waist to his ankles, a dark cloth over his shoulders and a white turban round his head; in his right hand he carries a *kilundu* of honey beer. A bullock is killed by him with his own hand and a feast and dance held. All present eat of the meat, but the young men and children do not dance or drink beer. The dancing is done by the old men and the women.

Miscellaneous.

The Wa-Sania year starts in April and consists of twelve months, divided up into three periods of four months each.

The 1st period is called *Gunn*.

2nd " " *Adolava*.

3rd " " *Huggaie*.

Count is kept of the days by making a notch in a stick for each day. When the month is finished the stick is placed aside and a fresh one started. Time is calculated by the sun. A rainbow is called *Ulch Wakat*, which means God's bow.

When an eclipse of the moon occurs they say it has fallen into water, and on these occasions the women dance until it reappears again; during an eclipse of the moon men do not cohabit with women.

Blood of a human being accidentally shed is covered up with earth, as it is considered to bring bad luck to others who look at it.

If a person sneezes many times it is said that someone is saying evil things of

the sneezer; if a person sneezes only once it is believed that someone is speaking well of him.

A person is said to yawn because he is either sleepy or hungry.

The Wa-Sania most strongly object to being counted, as they believe that one of those who were counted would die shortly afterwards.

The Wa-Sania say that God first made one man who lived for a long time alone. At one period of his existence there was darkness for seven days, and towards the end of these days the man, feeling very lonely, called out and beseeched God to bring him a companion; having called on God he stretched out his hand and felt something lying near him, and on the eighth day when the darkness passed away he saw that God had brought him a woman to be his mate.

People are not allowed to cross over each other's shadows. They consider it is a bad thing to step over the body of a sleeping person, as if the latter is sick the same sickness will lay hold of the one who steps over the sleeper and *vice versa*.

Nails are kept short to prevent them from splitting. Pieces cut off from the nails are buried in the ground on the spot where they were cut, as they say that these pieces are portions of their bodies. If a person loses any part of his body, such as an arm or a leg, it is buried in the ground, but without rites. When a child loses its milk teeth it will stand up in the village with its legs apart, and taking the teeth in its hand will bend down, and throw the teeth between its legs and say "go to the place we both came from when I was born."

When a man spits he will cover the spittle up with earth. When spittle accidentally falls on another person it is said to be a sign that the two people are friendly disposed towards one another.

If an earthquake occurs the Wa-Sania hold a dance and much beer is drunk by the men and women; a fire is lighted and *luban* scent is placed on it as an offering to appease the anger of Lafatamunuk, a supposed devil, who is said to live in the centre of the earth; they say that unless this offering is made a famine will occur.

They say that thunder is caused by God running along the tops of the clouds and shaking the dried skin of some immense animal. They believe that God's wife at times waves her arms about and that lightning is the glint from the ornaments worn on them.

Before he enters the married state a man is not permitted to grow a beard. Men shave the hair round their private parts and women pull out the hair growing there. Wa-Sania always keep the hair of their heads fairly short.

Wa-Sania do not make any iron implements. Knives and arrow-heads are bought from Swahilis and others.

There are two or three permanent villages inhabited by the Wa-Sania, but as a rule they do not build permanent huts. Their habitations are small, round in shape, and made of grass and boughs.

Wa-Sania do not trade amongst themselves, but with the Wa-Giriama, Swahilis and other people, exchanging ivory and rubber for rupees or food. Formerly cotton cloth passed for money among them, but now they all know

the value of the rupee. They are as a rule most generous to each other, and one person obtaining money usually keeps only a portion for himself, and divides the remainder up amongst his relations and friends.

The Wa-Sania believe that formerly human beings did not die until one day a lizard (Dibleh¹) appeared and said to them, "All of you know that the moon dies and rises again, but human beings will die and rise no more." They say that from that day human beings commenced to die.

They say that formerly the Wa-Sania did not marry until one day one of their elders, calling a meeting of the tribe, pointed out to them that they were like animals, knowing no father or mother. The matter was discussed by those present and they decided to marry.

They say that originally they always ate meat raw, until a woman on going to gather firewood found a dead rhinoeros which had killed itself by running on to a stake; near the carcass she saw a fire, and cutting off some flesh from the dead beast, cooked and ate it. From that day the tribe started cooking meat.

Originally all the tribes of the earth are said to have known only one language, but during a severe famine everyone went mad and wandered in all directions, jabbering strange words, and thus the different languages started.

Fairy Tales.

One day a small sea bird was hopping about close to the sea when the tide was on the ebb, picking up food, it was accosted by an elephant who asked it what it was doing. "Oh," said the bird, "can't you see I am drinking water; if you wait a bit you will observe that the sea gets less." The elephant waited for a while and saw that the water gradually receded from the shore. Before he left, the bird said, "Come back to-morrow and I will be sick and throw out all the water from my stomach," at the same time mentioning an hour at which it knew that the tide would be on the flow. At the appointed time the two met near the shore, and the bird flying to the edge of the sea alighted and commenced hopping about pretending to be sick the whole time, and the elephant marvelling greatly, saw the water gradually increase.

After a time the bird turning to the elephant said, "Yesterday you saw that I who am so small and insignificant was able to drink a large quantity of water. Surely you who are so immense will be able to drink the sea dry!" The elephant, not wishing to be outdone by a small bird, started drinking the salt water, and in a short time died from the effects. The bird then flew off laughing at the elephant's foolishness.

(2.)

One day a lion went to his friend the hare, whom he knew to be very clever, and told him that unless he could catch some game to eat he would shortly die of hunger. The hare said to him, "I will invite a number of animals to come here

¹ It is usually the lizard who brings this message where the myth is found, the chameleon having been previously sent to announce the men will revive.—G. W.

for a dance, but first of all I must bury you in the sand." The lion agreed, and the hare, having first buried him, went out and asked several animals to come and join in a dance he was giving; some of them accepted his invitation and followed him to a spot near where the lion lay buried. When the assembled guests were busy dancing the lion rose up from his place of concealment and killed as many as he wanted. Having thanked the hare for his assistance he commenced to satisfy his hunger.

(3.)

Very many years ago fire and water were friends. One day, however, a fire was sitting near some water, when the latter rose up and extinguished it. From that day to this fire has been afraid of water, and avoids going near it if possible.

(4.)

Once during a drought all the beasts of the jungle met together to consider what steps they should take to get water. All agreed that they would help to dig a large well, except the hare, who was lazy, and did not want to work. The other animals were very angry, and told him that if he would not assist them he would not be allowed to drink from their well. The hare replied that if he wanted water he could always get it. When the well was completed, the hare, who was very thirsty, taking with him a pot of honey, proceeded to the well, where he saw a young elephant keeping guard. On seeing him the elephant asked him for some honey; the hare replied, "I will give you honey if you will allow me to drink, but as I am afraid you will catch me when I am drinking, you must first of all let me tie up your hind legs." The elephant agreed, and the hare having securely fastened his hind legs, gave him a little honey. He then proceeded to drink as much water as he wanted; having done this he threw earth into the water and made it as dirty as possible. The elephant was very angry but could do nothing as his legs were tied. In the evening the animals came to drink and found him still tied up, and the water filthy. The young elephant's father was very angry, and beat his son severely for allowing himself to be fooled by their common enemy the hare.

The following day the lion was left in charge, but he, too, was unable to resist the honey cunningly offered him by the hare, and allowed himself to be tied up, and the animals coming for their evening drink found him lying helpless, and the water as dirty as before. On the third day the elephant ordered a turtle to conceal himself in the water, and if the hare came to drink to seize hold of him. About mid-day the hare came to the well, and satisfying himself that nobody was about, went down to drink. As soon as he put his paw into the water the turtle seized it in his mouth and held on tightly until the evening. When the elephant arrived he laughed loudly on seeing that his ruse had succeeded, and at last the wily hare had been caught. He then started off to get some rope with which to tie the captive up. The hare, however, said, "Don't bother to go and get rope, there are plenty of banana trees here, tie me up with strips taken from their leaves." The

elephant did so, and leaving the hare lying in the sun went off to search for a stick with which to beat him. While he was away the sun rapidly dried up the leaves with which the hare was bound and made them so brittle that he was able to break them without much effort, and he ran off. When the elephant returned he found that his captive had disappeared.

(5.)

Many years ago a dispute arose amongst all the animals and reptiles as to who should be king over them. After a lot of talk it was arranged that they should all start from a certain spot and race to a fallen tree trunk, which they all knew of in the forest. When they had assembled at the starting-point the chameleon climbed up a bush just behind the waterbuck and seized hold of its tail. On the word being given to start, the waterbuck dashed off, easily reached the winning-post first, and turned round to laugh at the others, whereupon the chameleon jumped on the tree trunk and called out, "Why are you laughing, can't you see that I am here before you?" The waterbuck turning round, to his amazement found the chameleon sitting on the winning-post. He, however, acknowledged that he was beaten and the chameleon was appointed king.

(6.)

A lion who lived near a small forest bird called Ndundu was continually laughing at the latter, who he said had a feeble voice. This annoyed the Ndundu, who one day told the lion that when he proceeded to hunt game the next day he would accompany him and arranged with him that immediately the lion killed anything they would both cry out, and their respective wives on hearing their husband's call would cook their dinners. That evening the Ndundu called together all his relations, and arranged with them that when he and the lion went off to hunt the following day, they should fly after them and distribute themselves along the way, so that when he called out, the one nearest him would be able to hear, and call out to the next and so on until his wife heard the cry. The next morning the lion and Ndundu went off, and, unknown to the former, were followed by the latter's relations. After travelling a long distance, the lion killed a zebra and at once emitted three terrific roars; the Ndundu also chirped three times, and the chirps were heard by his relations nearest him, who passed it on, until his wife hearing the cry, cooked her husband's dinner. When the lion had satisfied his hunger he and his companions went home. On their arrival they found that the Ndundu's wife had prepared her husband's dinner, but the lioness had prepared none. The lion was very angry and scolded his wife, who replied that she had not heard him roar or she would have cooked food for him.

The Ndundu's wife, however, said she had heard her husband's call a long while ago, and on hearing it had started preparing the food. The lion was very annoyed to find, as he imagined, that the Ndundu's voice was louder than his, but in the future did not aggravate the bird by laughing at him.

ON CERTAIN PHYSICAL CHARACTERS OF THE NEGROES OF THE CONGO FREE STATE AND NIGERIA.

*Being a Report on Material supplied by Mr. E. Torday,
Mr. T. A. Joyce, Mr. P. A. Talbot, and Mr. Frank Corner, M.R.C.S.*

BY ARTHUR KEITH, M.D., Conservator of the Museum, Royal College of Surgeons,
England.

[WITH PLATES I-IV.]

AT the present time the affinities and relationships among the great conglomeration of negro tribes found between the extreme of the Guinea Coast, on the west, and the source of the Congo, in the south-east, are obscure and difficult to unravel. For their solution we require a very extensive series of observations, many more than we have now at our disposal, but we can only hope to obtain such a series by a systematic publication of such as come to hand. The observations published here relate to small groups of natives and limited series of crania, but they are from those parts of Africa which are imperfectly known, and from which every contribution is welcome.

The material at the writer's disposal is the following :—

- (a) Mr. Emil Torday's measurement of tribes in the Congo Free State. They relate to the maximum head length, head breadth, nose length and breadth, bizygomatic width, upper face length and total face length, circumference of head, stature, span, pigmentation, hair, and mutilations of teeth.

His observations are published in full in the tables at the end of this report and relate to 81 individuals (63 male, 18 female). In dealing with his measurements I have divided the tribes into the following groups :—

- i. The Bushongo, 18 males, 2 females, from the Sankuru River in the south-central part of the State.
- ii. The Basoko, 11 males, 4 females, from the eastern region of the State, at the confluence of the Arnwimi with the Congo.
- iii. The Sango, 10 males from the Mubangi River in the north-central part of the State; a people speaking a non-Bantu language.
- iv. A miscellaneous group of 24 males from various parts of the State: 6 from the north-eastern part of the State—Azande, Momuu, Bangeline, etc.; 6 from the north bank of the northern bend of

the Congo—Bangala, Gombe, Bula, etc.; and the remainder from the south-eastern part—Bapoto, etc. I purposely placed the representatives of various tribes together to compare such a composite group with the three others which are regarded as natural tribes.

v. A miscellaneous group of 12 females from various parts: 5 Gombe—north bend of Congo; 2 Bapoto and 3 Mongivi from the north-central region.

(b) Mr. Torday's collection of the crania of the Batetela, a tribe in the south-central region of the Free State between the sources of the Sankuru and Lomami Rivers. This collection is now in the Museum of the Royal College of Surgeons, and consists of 86 crania, belonging to immature subjects and adult males and females. The detailed measurements of this collection have been made by pupils of Professor Karl Pearson, who will publish them. Meantime he has kindly supplied me with the mean of the chief measurements. Here I publish certain results and diagrams of some of those crania made by a new system of measurements.

(c) Mr. P. A. Talbot's measurements of certain tribes in the south-eastern (Oban) district of British Nigeria. These tribes are natives of a region to the east of the Cross River. Mr. Talbot's measurements are similar in nature to those of Mr. Torday. We have thus an opportunity of comparing the physique of Nigerian with Congolese natives. The tribes included in his measurements are:—

The Ekoi, 23 male, 1 female, chiefly from Oban, a town to the east of the Kiva River.

The Korawp, 13 males, 4 females, living eastwards from the Ekoi and on the border of the German Cameroons.

The Kabila, 10 males, to the west of the Ekoi of the upper stretches of the Calabar River.

A miscellaneous group, 9 males, 2 from Calabar, 4 from Uyanga to the west of the Kabile, the 3 remaining individuals being from further west still. Thus the four groups we have to deal with come from that part of Nigeria which lies between the border of the German Cameroons and the Cross River. The order of the tribes from east to west is: the Korawp, the Ekoi, the Kabila, the miscellaneous group.

i. Five crania found by Mr. Talbot in the Ekoi country—3 were probably of males, 2 of females.

ii. Five crania which Mr. Frank Corner placed at my disposal which were obtained from the delta of the Niger—at Ogoni, near Bonny. The crania came from a district about 100 miles to the south-west of Mr. Talbot's district.

The south-eastern part of Nigeria lies on the border line between the Sudanese and Bantu-speaking negroes. Mr. Corner's crania come from a non-

Bantu country, while Mr. Torday's material comes chiefly from what may be regarded as a typical Bantu negro country. One object I have kept in mind was to see how far the Bantu-speaking negroes could be distinguished from the non-Bantu. Besides the data thus placed at my disposal I had also the collection of crania in the Museum of the Royal College of Surgeons, England, from the west coast of Africa, and Professor Waterston's report on the anthropological data collected by the late Dr. MacTier Pirrie in his sojourn amongst the Nilotic negroes,¹ as well as the monographs published by Dr. Frank Shrubbsall in various numbers of this *Journal*, and the writings of Sir Harry H. Johnston, which have been of great service to me.

Stature.—In order to obtain some conception of the various groups of negroes dealt with in this paper I propose to deal first with the data relating to their stature. Table 1 gives the mean stature for each group and a rough conception of the degree to which stature varied from individual to individual. Placed according to the degree of stature the order of the tribes is as follows:—

C. Miscellaneous Congo group...	...	1652 mm.
C. Basoko	... ..	1658 „
N. Korawp	... ..	1676 „
C. Sango	... ..	1688 „
N. Miscellaneous Nigerian group	...	1694 „
N. Ekoi ...	... ..	1709 „
N. Kabila	... ..	1727 „
C. Bushongo	... ..	1747 „

Thus the Nigerian tribes are taller than the Congolese with two exceptions: the Nigerian Korawp are in the more diminutive group, the Congolese Bushongo in the taller. We shall see that in many characters the Bushongo are marked out from the surrounding tribes; the stature of the Korawp—a tribe on the border of the German Cameroons—is reduced by the inclusion of two individuals almost of pygmy stature. A pygmy tribe, the Batelle, occurs towards the north of the German Cameroons. Stature is not a character which will serve to mark sharply off the Bantu-speaking people from the Sudanese. The Nigerian Ekoi and Kabila are much the same height as the Fertit and Nyam-Nyam tribes of the Sudan, but the males of Darfur are shorter and approach the Congolese Sango tribe in stature. The Bushongo of the Congo are nearly equal in stature to the Buruns, who live on the western borders of Abyssinia, but fall some 50 mm. short of the mean stature of the Dinkas. If we include as a middle group those tribes between 1690 mm. and 1729 mm. in stature with those below as a lesser stature group and those above as a greater, then we have the following table:—

¹ *Report upon the Physical Characters of some of the Nilotic Negroid Tribes*, by David Waterston, M.A., M.D., from the Anthropological Laboratory of Edinburgh University, 1908.

		Nigerian.	Congolese.	Nilotic.
Lesser Stature	... {	Korawp — —	Miscellaneous group Basoko Sango	Fur — —
Medium	... {	Miscellaneous group Ekoi Kabila	— — —	Fertit — Nyam-Nyam
Greater Stature	... {	— —	Bushongo —	Burun Dinka

Span, and its relationship to stature.—Sir Harry Johnston describes long arms and short legs as characteristic of the Forest type of African negro. We expect in an individual of the Forest-negro type that the span will be considerably greater than the stature. In the Nilotic type of negro, in which the lower limbs are long, the span may be absolutely much greater than in the Forest type of negro and yet when compared to the stature of the body be much less. For that reason I am inclined to lay greater weight on the absolute rather than on the relative extent of the span. Of the various groups of negroes—Niger, Congo and Nilotic—included in Table II, the Korawp, a Nigerian tribe, are the most remarkable. In their stature they belong to the dwarfish group, while the Kabila living in a country some distance to the west of them are placed in the taller group, but in respect of absolute span the Korawps take a place considerably above the Kabila; evidently in the Korawp the legs are short. Their span is 122 mm. greater than their height (the span is 7 per cent. greater than the stature). Two of the rather diminutive Congo tribes—the Basoko and Sango—show an opposite extreme; the span is only 3 to 4 per cent. greater than the stature. The more massive Bushongo—also a Congo tribe, like the Bongo and Nyam-Nyam tribes of the Sudan, show absolutely and relatively a great span—5 to 6 per cent. more than the stature. The Ekoi (Nigerian), the Fertit and Fur (Sudan) tribes show a medium excess of span over stature 2 to 4 per cent. The typical Nilotic negroes (Dinka and Burun), although the span is absolutely very great, belong to the medium group. Thus as regards span we get only a slight indication to the probable affinities of the tribes; the Bushongo are marked out from the other Congo tribes and find their allies in the Nyam-Nyam of the Sudan and the Korawp and Kabila of Nigeria. Topinard gives the span as 108 per cent. of the stature for negroes in the United States; none of the groups dealt with here reach that

figure, yet the majority of the American negroes were originally natives of the Nigerian and Congo regions. In the women the difference between span and stature is less than in men. In the absolute span, absolute stature and relationship of the one to the other there is an extreme degree of individual variation in both male and female. If we may divide these tribes into three groups, placing those with a span between 1750-99 in the middle, and the others in upper and lower groups, then the miscellaneous Congo, the Basoko (Congo), Sango (Congo), miscellaneous Nigerian must go in the lower; the Fertit, the Fur (Sudan), the Ekoi, the Kabila, the Korawp (Niger) in the middle; the Nyam-Nyam, Burun, Bushongo and Dinka in the higher—all the latter being located in the Sudan except the Bushongo. In stature and in span the Congolese Bushongo find their nearest allies in the Nilotic negroes.

One of the main objects I had in view was to see if the inhabitants in the south-eastern part of Nigeria may be regarded as a northern extension of the tribes found within the watershed of the Congo or are, as is at present supposed by many, a southward extension of the type of negro usually classed as Sudanese. Stature has not assisted us greatly; the Korawp are short legged, long armed, of low stature, and presumably of that type to which Sir Harry Johnston has given the name of Forest negro. The Kabila and Ekoi are rather of the Nilotic type, while the miscellaneous group drawn from further west—nearer the Niger—are of low stature, as are many of the Congolese tribes. We shall see, however, when we come to deal with the form of head that there is a marked difference between the somewhat dwarfish Nigerians and the Congolese tribes of low stature. To further assist us in forming a picture of the various tribes, I propose now to deal with the characters of the nose.

The characters of the nose.—The shape and proportions of the nose form one of the most distinctive features of the negro. In the various groups included in Table III an average or standard group may be arbitrarily demarcated in which the mean dimensions of the width of the nose at the alæ varies from 43 to 44.9 mm. and from 44 to 45.9 in length, with a larger and smaller nosed group to contain the races which fall short or exceed the mean. To a certain extent the dimensions of the nose indicate those of the face. To the larger-nosed group belong the Nigerian Kabila and Korawp and the Congo Bushongo, although the last named falls below the major width limit, yet as regards length it exceeds any other tribe under consideration. In the middle group are the Ekoi, miscellaneous Nigerian people, and the Sudanese Nyam-Nyam tribe. In the smaller group are the Congolese Sango, miscellaneous Congo peoples, the Sudanese Fur tribe—all of which are also of small stature. In the Fertit (Sudan) and Basoko (Congo) the length is of the lower group, but the breadth of the middle standard; in the Dinka, Burun, Bongo (all Sudanese) the length is of the middle standard but the breadth of the lower standard. Thus in the Nigerian region we find the nose reaches its greatest dimensions; in the Sudan and in the Congo regions we find two types, one of medium length but relatively narrow, and another which is short but relatively and absolutely wide. If we arrange these tribes into three groups, placing those in which

the breadth of the nose is between 96 and 99.9 per cent. of the length as a middle group, we find the Congolese Sango and Basoko with the miscellaneous Nigerian people in the upper group (all of them small in stature); the Kabila (Nigerian), Fertit, Fur (Sudan), Korawp (Nigerian), Nyam-Nyam and Burun (Sudan), and miscellaneous Congo in the middle group; the Ekoi (Nigerian), Bongo and Dinka (Sudanese), and the wide-nosed Bushongo (Congo) in the lower or relatively narrow-nosed group. In seeking to estimate the importance of narrowness of nose as a character of race one must remember that the width of the nose may be the result of a process which seems to be at work in all people who are living on well-prepared food. The palate and face tend to become narrower; the cheeks to be retracted and the nose to become more prominent and narrow. One can understand how the wide and flat negro nose could, if such a tendency be at work, become a more prominent and narrower structure; it may assume such a character independently in various races as a result of a prolonged survival in a state of African civilisation as well as of European civilisation. At least the races living in a primitive manner are those with wide flat noses. I am not inclined to agree with those who account for all anthropological character by assuming that such a character as the Dinka nose betokens an infusion of Mediterranean blood; we have no reason to suppose that this character is not as truly a character of the Dinka as his black colour. I do not deny that Arab blood has been infused throughout the region of Africa with which I am dealing, but I do not think that the various types of nose found in the Nigerian, Congo and Sudanese tribes dealt with here are to be regarded as a result of hybridisation. We see in each tribe a tendency to production of a definite type, wide and short in some, long and narrower in others, and I am inclined rather to look for affinity as much in the absolute dimensions as in the proportion that one dimension holds to another. The Nigerian tribes are characterised by the massiveness of the nose—its absolute length as well as its absolute width, the Ekoi showing affinities to the eastern tribes of the Sudan more than the others. The Bushongo, although in the relative proportion of width to length resembling the Nilotic negroes, yet in absolute measurements is associated with the Nigerian tribes. The Sango and Basoko have remarkably short noses and proportionately very wide. The miscellaneous Congo group, drawn chiefly from the north-east part of the Congo, have nasal dimensions very similar to the adjoining Sudanese tribes—the Nyam-Nyam, Bongo, Fur and Fertit. The Nigerian Ekoi also come near to this group. Thus nasal characters give us no clear lines of tribal division between the Congo and Sudan regions beyond a tendency to narrowness in the east and to width in the west and shortness in the centre of the Northern Congo.

Bony margin of the anterior nasal aperture.—The manner in which the anterior nasal orifice is bounded in the dried cranium falls into three types: the most primitive or simian type where the lateral margin of the aperture is continued on towards the alveolar margin, the lower margin of the aperture being rounded and separated into right and left by the nasal spine. In the *intermediate type*, of which

there are many varieties, the lateral margin turns inwards and a ridge from the nasal spine (the paraseptal ridge, Macalister) turns out towards it, but the two are separated and remain unfused. In the European type the paraseptal ridges fuse with the lateral margin and thus the lower aperture of the nose is bounded by a sharp edge. The following is the distribution of these three nasal types in the crania with which we are dealing :—

Crania from	Number.	Simian.	Intermediate.	European.
Ekoi country... ..	3	0	2	1
Niger Delta	5	0	5	0
Batetela (male)	14	3	11	0
„ (female)	16	3	4	9
Negroes (West Coast) (male) ...	35	9	15	11
„ „ (female)	30	7	16	7
Negroes (South African) (male) ...	30	—	23	7
„ „ (female)	10	1	7	2

The intermediate type prevails in all tribes of negroes; in those of South Africa there is a tendency to assume the European type; in those of West Africa—especially amongst the women—a tendency to the simian type. Amongst the Batetela the women have the narrower and more sharply marked nose, but the sexual difference is not constant amongst the various tribes, as may be seen from Table III.

Characters of the face.—The zygomatic arches, which afford a means of estimating the width of the facial part of the skull, give origin to two important muscles of mastication. They are essentially structures concerned in the mechanism of mastication, and whoever would obtain an insight into the circumstances which regulate the degree of their lateral projection and therefore of the width of face must first study the mechanism of mastication. The posterior end of the arch being attached to the base of the cranial cavity will be affected to some extent by all the circumstances which affect the shape and size of that cavity. The anterior end of each arch is attached to the face proper, and hence will vary according to the narrowness or width of the face, which may be regarded as a bony scaffolding thrown out to carry the teeth and palate, and therefore in the main part of the mechanism of mastication. Thus, while the width between the posterior parts of the arches is influenced by the width of the cranial cavity, the anterior parts are subject to variations in the masticatory apparatus, and it is plain that we ought to record the anterior as well as the posterior bizygomatic width. We have to deal here with the data at our disposal, and they relate more to the posterior than to the anterior part of the arch. We find in the main that there are two types of

faces among men—the wide and short—where the muscles of mastication are distinguished by their thickness rather than by their length, and a narrow and long face in which the muscles of mastication are characterised by the length rather than the number of their fibres. In the negro race the prevailing form of face is the wide short type. Indeed the laterally projecting cheek-bones and zygomatic arches—especially as regards the frontal breadth—is one of the characteristics of the negro race. Now of all the tribes under consideration the Bushongo has the greatest width of face; the diminutive Basoko have the narrowest; in the first the bizygomatic width is 143·7 mm., in the second 128—a difference of nearly 16 mm. If we may divide the tribes into three groups, placing those in which the bizygomatic diameter lies between 134 and 137·9 mm. as the middle division (see Table IV), then in the wide group are the Bushongo (Congo), the Nyam-Nyam (Sudan), the Fur (Sudan), Korawp (Niger), Kabila (Niger), Dinka (Sudan), Fertit (Sudan), and Batetela (Congo); in the middle group, the Sango and miscellaneous Congo group, the Ekoi and miscellaneous Niger group, and the Burun (Sudan); in the smaller narrow-faced group the Bongo (Sudan), and Basoko—the dwarfish Congo tribe. Thus as regards width of face the Nilotic negroes stand pre-eminent with exceptions in the Burun and Bongo tribes; the Congolese Bushongo, which in other points show affinities to the Nilotic and Nigerian tribes, agree with them also in this character.

Hitherto I have said little of the small but remarkable group of skulls from the Niger Delta, placed at my disposal by Mr. Corner. They are characterised by the shortness of the face (49·6 mm.) besides other features of the skull which I shall describe presently. They fall at the end of the series showing the length of the face (see Table V). If we take 61·9 mm. as the upper limit of the short-faced group, then with these Nigerian crania must be placed two other Nigerian groups; the Ekoi and miscellaneous group; also the Basoko, Sango and miscellaneous Congolese; but all the Sudanese tribes with the Kabila and Korawp of the Niger and the Bushongo fall in the medium group. Only the Dinka exceed the upper limit of the medium group which I place at 68 mm. A consideration of the proportion of the upper face length (naso-alveolar) to the width (bizygomatic) also emphasizes the remarkable character of the face of the crania from the Nigerian Delta. Faces fall naturally into three groups, the proportionally long, medium, and short. The medium group includes those in which the face length is 45 to 49·9 per cent. of the face width. The people of the Niger Delta, the miscellaneous Nigerian group, and the Sango belong to the series of the short-faced group; because of their wide bizygomatic measurements the Bushongo, the Nyam-Nyam and miscellaneous Congolese also belong to this group. I think it will be found that the crania from the Nigerian Delta are worthy of consideration as a distinctive type; the short wide face is only one of the more distinctive characters; we shall see that they are also well differentiated by the characters of the cranium, and I suspect that the Congolese Sango have more than a superficial resemblance to the type which apparently finds its purest representatives in the people of the

Nigerian Delta. They are people of small stature, allied to the Ashanti, but markedly different to the great number of the tribes of the West Coast. The Basoko, also a tribe of small stature and short face, is placed in the medium group owing to a corresponding narrowness of the face, while the Sudauese Bongo tribe, also a tribe of relatively small stature, reaches almost to the upper group, owing to the narrowness of the face. Only the Dinka have a face in which the length is half that of the width. Thus as regards character of face we have the Dinka occupying one extreme, the long-faced type and the Nigerian Delta people the other; the intermediate tribes of the Sudan and Congo occupying intermediate positions.

Characters of the forehead.—The negro forehead is marked by several peculiar features. The upper part is prominent, almost bulging; the two frontal eminences, which in European and Asiatic races are usually some distance apart, approach each other and may fuse in the middle line. The prominence of the upper part of the forehead is due, I think, partly to a flexure of the cranial base (see Plates I and II), and partly to a side to side compression of the frontal lobes—a compression which leads to a narrowing and forward projection of that part of the frontal lobes which are covered by the frontal eminences. The functional explanation of the upper frontal prominence of the negro forehead is not yet discovered; I regard it as the persistence of an infantile character. It is extremely marked in the Bushman and Hottentot and may be regarded as one of the most characteristic negro marks.

In the supra-orbital region of the forehead variable characters are shown by negro tribes. Professor Schwalbe, as is well known, regards the *torus supra-orbitalis* as a distinctive racial mark of Neanderthal man; the late Professor Cunningham gave an able analysis of this character (*Trans. Roy. Soc. Edin.*, 1908, vol. xlvi, p. 283). I have mentioned Mr. Corner's five crania from the Niger Delta, but as yet I have scarcely alluded to the five crania brought home by Mr. Talbot from the Oban or Ekoi district of Nigeria. All we know of Mr. Talbot's crania is the locality in which they were found; they do not answer to the measurements of any of the Nigerian tribes examined by him. In one the upper incisor teeth were filed to a peg-shape—a character of many Congo tribes. Among Mr. Talbot's skulls there was one of a female which clearly belonged to the same type as the Nigerian Delta crania; the other four (three males and one female) recalled closely the features of certain Congo tribes—especially the Batetela which I had examined before receiving Mr. Talbot's collection from Nigeria. Thus, while the crania collected by Mr. Torday were predominantly of what I propose to name the Congolese type, those from the Niger Delta were of a very different character. I propose to recognise this form as the Nigerian type. The manner in which these two types differ I shall deal with presently. In the meantime I am concerned with the frontal characters only. Now in the Batetela crania—which I regard as representative of the Congolese type—the frontal sinuses are well inflated so that the bone of the glabellar, supraciliary and interorbital regions of the forehead

forms a rounded elevated thin wall over the sinuses. In the Nigerian type of skull it is otherwise; the sinuses are developed to a less degree, and bone of the the glabellar, supraciliary and supraorbital regions is not spread out into an even elevation over the lower forehead, but massed in bars forming well-marked supraciliary and supraorbital ridges. Indeed in two of the Nigerian Delta skulls the supraciliary and supraorbital elements fuse and form a real, although small, *torus supraorbitalis*; the glabella overhangs and projects beyond the retracted nasion. Figures 1B and 2B will help to make the difference in type clear to the reader. There can be no doubt that prominent supraorbital formations are more common in the West Coast of Africa than elsewhere in that continent; it is a character they share with the negroids of the Pacific, and in a much less degree with the Neanderthal race. Considering the close connection which exists between Western Europe and Africa at Gibraltar, it is not improbable that there may yet remain in West Africa some evidence of those characters which distinguish the early human inhabitants of Europe. For our present purpose it is enough to say that Nigeria appears to be on the frontier between two different negro types—the Nigerian and Congo types. It is not to be expected that these types have remained pure. In one of Mr. Talbot's specimens the supraorbital region tends towards the Nigerian type; in one of Mr. Corner's towards the Congolese type. The character is chiefly sexual in nature, for in the females of both types the frontal sinuses and supraorbital ridges are much less developed than in the males.

I add here a summary (see Table VII) of Mr. Talbot's observations of the foreheads of Nigerian tribes. The features of the negro forehead are its height, narrowness, and steepness. The Ekoi, the Korawp, and especially the Kabila show these characters; so do the majority of the miscellaneous group, but in the latter the low and receding forehead occurs with greater frequency. I suspect that this will be found to be the case in the tribes of the Gold Coast to the West of the Cross River.

Characters of the Cranium.—I have mentioned some features of the type of negro that occurs in the Delta of the Niger—the shortness of the face, the development of the supraciliary and supraorbital elevations of the forehead—but the chief character of the type is seen when the cranium is viewed in full face and contrasted with the Congolese type, such as the Batetela cranium. The crania shown in Figs. 1B, 2B, 3B, and 4B are oriented according to the manner I described in the *Journal of Anatomy and Physiology*, 1910, vol. xlv, p. 250, viz., upon an internal plane which corresponds to the lower limit of the occipital lobes of the brain and to the under surface of the frontal lobes—the subcerebral plane. When crania thus oriented are represented in full face, it is seen that there is a marked difference between the Nigerian and Congolese types (see figures). In the Congolese type the cranial cavity is flattened from above downwards and the lateral walls of the parietal region bulge outwards. In the Nigerian type the lateral walls are flattened and approximately vertical in the parietal region; the roof of the skull arches up to the sagittal suture. While the inter-frontal diameter

of both types of skull are nearly alike, the parietal region of the Congolese type is markedly wider. Take for example the type of skull found by Mr. Talbot in the Ekoi country (Figs. 4A and 4B) which I regard as of Congo origin—for it closely resembles the Batetela crania (see Figs. 1A and 4B). It will be seen that the lateral parietal region extends about 25mm. beyond the temporal lines of the frontal region of the skull; in the Nigerian type the extension of the parietal region is less than 20 mm. A comparison of the frontal and parietal widths of the skull is the best method of bringing out this difference, but here we must trust to the absolute parietal breadth because the frontal breadths have not been recorded in the tribes with which we are dealing. The functional significance of this character is unknown; why the brain should tend to assume a relatively great parietal width in the Congo type, we cannot tell, but we may suspect that it indicates a real difference in the cerebral functions.

The breadth of the Negro Crania.—In order to compare the measurements made on the head of the living with those made on crania I have deducted 10 mm. from the measurements of the first as representing the thickness of the soft tissues—a deduction which is justified by recent observations made by Dr. John H. Anderson.¹ In Table VIII the deductions have already been made. This paper being but a preliminary enquiry into the possible relationship of the negro tribes north of the equator, I am using such data as are at my disposal without troubling about their mathematical significance; I am simply making a preliminary survey of how the character of head breadth is distributed among these tribes. One fact becomes at once very apparent, that the three male crania found by Mr. Talbot in the Ekoi country are very different to any other random sample from a negro tribe in Equatorial Africa. The mean maximum width of the three is 150 mm. Another point which is emphasized is the narrowness of the Dinka head—it is only 132 mm. Dr. Shrubbsall's mean for 58 Ashanti crania (of male and female) is 129.3 mm., which probably signifies that the mean for the male Ashanti is about 133–34 mm., for the sexual difference is from 8 to 10 mm. In Table VIII, we have tribes from three regions of Africa: Nigerian, Congolese, and Nilotic. In each region we find tribes showing heads of lesser, medium and greater breadths. If we take the medium group to include those between 135–137.9 mm., then to this group belongs nearly all the Nigerian tribes—the Ekoi, Kabila, miscellaneous Nigerian and those of Upper Guinea or Gambia; the Congolese Sango and the Gaboon tribes also belong to the medium group. To the wider group belong the Korawp (a Nigerian of the Forest-negro type), the Bushongo (a tall Congo tribe), the Basoko (a dwarfish Congo tribe) and the Batetela; the Sudanese or Nilotic tribes are also represented in the maximum group by the Nyam-Nyam, Burun and Fertit. In the group of narrow heads are the Dinka, Bongo and Fur (Nilotic), the Nigerian crania and the miscellaneous Congo group. We see at once that there is no manner of harmony between stature and head breadth; tribes of small or medium stature are associated with a tall tribe such as the Dinka and the tall wide-headed Bushongo with the dwarfish Basoko. The

¹ See this *Journal*, vol. xl, 1910, p. 264.

point I wish to emphasize is that all those tribes showing the smaller head breadths have crania belonging to the type I have named Nigerian, while those with the wider head breadths belong to the Congo type. The crania flattened laterally in the parietal region occur chiefly in the Nigerian and Nilotic regions.

The maximum head-length of the various Negro Tribes.—In comparing the measurements made on the heads of the living with those made on crania I have deducted, in Table IX, 9 mm. for the soft parts. In Table IX, as in Table VIII, I have included the measurements of three groups of skulls—the Gambian, including those negro crania in the museum of the Royal College of Surgeons, England, which were obtained from Sierra Leone, and the country to the north of that district; the Nigerian from the Gold Coast, from Sierra Leone to the German Cameroons, and the Gaboon group from the French Congo. In these three groups it will be observed that the maximum length of the crania is greatest in the Gambian group and least in the Gaboon group; the maximum width was the same in those two groups. We shall see that in the Congolese type of skull the length is reduced; we have already seen that the width tends to be greater. If we divide the various tribes from the Nigerian, Nilotic, and Congolese regions into three groups, including in the middle one those with a head length between 180–184.9, we find that the Nigerian Korawp (Forest-negro type), the Upper Guinea or Gambian tribes and the Nilotic Dinka are in the upper group; the Bongo (Sudan), Gaboon, miscellaneous Congo tribes and the dwarfish Basoko (Congo) are in the shorter group. The other Nigerian tribes—the Ekoi, Kabila, and miscellaneous group and crania—the Congolese Bushongo, Batetela and Sango, the Nilotic or Sudanese Fur, Nyam-Nyam, Burun, and Fertit are in the medium group. The long crania occur at the north-east and north-west corners of the region of Africa with which we are dealing; the medium and lesser measurements predominate in the centre and south.

Relationship of breadth to length of head.—So far I have been comparing the maximum length and breadth of the heads, but if now the relation of breadth to length is compared it is at once seen that the crania of the Congo tribes are relatively wide. For the purpose of comparing the various tribes I will include in a middle group those with a breadth or index of 74–76.9 per cent. of the length. Only two of the Nigerian tribes belong to the middle group—the Ekoi and the Delta tribes—and both to the lower series of the middle group. All the other Nigerian heads fall in the lower group. None of the Congo tribes fall in the lower group; most are in the middle, but two, the Batetela and Basoko, are in the upper group. As regards the Nilotic and Sudanese tribes, two are in the upper, Nyam-Nyam and Burun; two in the middle, the Fertit and Bongo; two in the lower, the Fur and Dinka. Thus to explain the exceedingly great variety in the size and shape of the head in the tribes across the Congo-Sudan belt of Africa, we must suppose that we are dealing with two contrasted types of crania which we have already distinguished as the flat-sided Nigerian and the bulging-sided Congolese—the transverse diameter prevailing in the one, and the long diameter prevailing in the other. To account for the distribution of these forms we must suppose, as we

indeed know there has been, a free tribal migration. We may distinguish three centres of head form: the Dinka centre in the north-east, where the head is absolutely long and absolutely narrow; the Gambian centre in the north-west, where the head is absolutely long and relatively narrow; and a Basoko centre in the south-eastern region of the Congo, where the head is absolutely wide and absolutely short. From the south-eastern centre in the Congo we find the brachycephalic type extends to the Batetela, and to the Nyam-Nyam tribe in the Sudan and the Burun on the western border of Abyssinia. The Congolese Sango, Bushongo, the tribes of the Gaboon, the Nigerian Ekoi (owing to a relatively small length than a great breadth), the Bongo and Fertit (Sudan) also show some degree of brachycephaly. We see that, as regards head form, the tribes examined by Mr. Talbot in the Oban district of Nigeria, although they show certain affinities in physical form with the Congo tribes, are in the main of the Nigerian type. The Bushongo also show relationship to the Nigerian type.

Height of the cranium.—In neither Mr. Torday's nor Mr. Talbot's observations were measurements of the height of the head taken. For information on this point we must fall back on the Batetela collection of crania from the Congo and the Nigerian collection of crania placed at my disposal by Mr. Corner and Mr. Talbot. As regards the height of the head in Nilotic negroes we have the measurements made by Dr. MacTier Pirrie. He gives the meato-vertical height, but in order to compare his measurements with those I have made in crania, it is necessary to deduct not only the thickness of the scalp (for which I allow 7 mm.) but also half the width of the meatus (5 mm.), for while he measured from the middle of the meatus I made those on crania from the upper border of the meatus. Hence in Table XI the measurements given for the Nilotic tribes have been reduced by 12 mm.

There are three methods of measuring the height of crania: (1) the meato-vertical height—the only suitable one for measurements on the living; (2) the basi-bregmatic height (suitable for crania), and (3) the method shown in Figs. 1A and 1IA where the height of the cranium is measured from the subcerebral plane, a plane corresponding to the lowest parts of the frontal and occipital lobes. It will be well to examine the last-named method first because it provides an opportunity of describing well-marked differences between the two contrasted types of negro crania which I have named the Nigerian and Congolese. Of the latter type the Batetela crania may be taken as examples; in Fig. 3 a composite profile is given of five male crania of that tribe, the specimens being taken at random. In Fig. 2 a composite figure is given of the three male crania obtained by Mr. Corner from the Niger delta. The maximum length of the two groups is nearly the same, viz., 183 mm. for the Batetela and 181 for the Nigerian. The highest point on the calvarium (the calvarial height) above the subcerebral plane is 99 mm. in the Congo type, 100 in the Nigerian type—practically the same. The highest point (marked on Figs. 2 and 3) is placed further forward in the Nigerian type. The basi-bregmatic height is 140.6 mm. in the Nigerian type, 132 mm. in the Congo

type. The apparent small height of the Congo type is due to the fact that the bregma is situated more directly over the basion than in the Nigerian type (compare Figs. 2 and 3). The highest point of the calvarium is 121.6 mm. above the auditory meatus in the Nigerian type, 115.2 mm. in the Congo type. Thus the height of the cranium, if measured from the meatus or basion, is greater in the Nigerian type than in the Congo, but if the subcerebral plane is taken as a standard, the heights are about equal. The position of the meatus is further forward and higher up in the Congo than in the Nigerian type; in the Congo type it is 7 mm. further forward and 4 mm. higher up than in the Niger type. The difference is due to the growth of the brain being more towards the lambda in the Congo type and more towards the bregma in the Nigerian type.

The difference between the two types of cranial form is also well seen when the meato-vertical height is compared with the maximum breadth of the skull. In the Batetela the meato-vertical height is 82 per cent. of the maximum breadth (see Table XI); in the three male crania from the Ekoi country the corresponding figure is 79.6 per cent., a feature which provides further evidence of the Congolese nature of these crania. Further observation will show that in the tribes of the purer Congo type the meato-vertical height of the skull will be less than 85 per cent. of the maximal breadth, while in the Nigerian type, which extends across the Sudan to the Nile Valley, the height will be over 85 per cent. of the maximal breadth. In Table XI, I have estimated this proportion for the Nilotic tribes and find it varies from 87 per cent. in the Nyam-Nyam and Burun tribes to 93 in the Dinka.

In the tribes of the Nigerian type, height prevails over breadth; in those of the Congo type, breadth prevails over height.

Cranial capacities and size of heads.—Certain of the tribes dealt with here show large heads, others are of small size. Unfortunately, I have no data relating to one of the principal measurements, viz., height. The tribes with a maximal length of 182 mm. and over, a maximal breadth of 138 mm. and over, are the Korawp (Nigerian), the Bushongo (Congolese), and Nyam-Nyam (Nilotic); the Basoko, Sango and Bongo (Sudanese) belong to the lesser-headed tribes. Professor Pearson informs me that the mean cranial capacity of the male Batetela is 1342 cc. (S.D. 127), of the female 1206 cc. (S.D. 108). In the group of Gambian crania (see p. 50) and in the Nigerian group the mean cranial capacity is 1450 cc., in the Gaboon group 1445. The mean for the three male crania from the Niger Delta is only 1240 cc. (see Table XI), for the Nigerian type of that district is of small stature and size. The capacity of the three male crania brought by Mr. Talbot from the Ekoi country is 1430 cc. It will be seen that larger and smaller headed types are found in each of the three groups of tribes dealt with here, but it will be found that smaller heads are more common in the Congo region.

Pigmentation, ear and lip form, and hair character.—Mr. Talbot has made certain observations on the ear form of the Nigerian tribes. In a paper published some time ago in the *Proceedings of the Anatomical and Anthropological Society of*

the University of Aberdeen (1906) I distinguished for the purposes of observation two contrasted types of ear: the small, appressed, retrograde "orang" type, and the large, projecting chimpanzee type. Mr. Talbot distinguishes six types, two of which—the "large outstanding" and the "small flat"—correspond to the chimpanzee and orang forms.

	Large and flat.	Large and Outstanding.	Medium and flat.	Medium and Outstanding.	Small and flat.	Small and Outstanding.
Ekoi	4	2	5	1	7	5
Korawp	1	6	0	0	4	4
Kabila... ..	0	3	0	0	5	2
Miscellaneous Group	$\frac{1}{2}$	1	$2\frac{1}{2}$	0	1	4

The chimpanzee type is prevalent among the Korawp, the orang type in the Ekoi and Kabila. The orang type is the form met with in the Bushman race.

He distinguished four types of lips, viz.—

	Thin.	Medium.	Thick.	Everted.
Ekoi	0	1	9	14
Korawp	0	$1\frac{1}{2}$	$9\frac{1}{2}$	6
Kabila	0	0	3	7
Miscellaneous Group	0	2	1	6

The everted type of lip is least common amongst the Korawp.

Pigmentation.—The colour of the skin in the Ekoi, Korawp and Kabila was uniformly a red-brown; this was also so in the miscellaneous group except for two individuals, in one of whom the colour was black and the other yellow. The Kabila and two of the nine of the miscellaneous group had the iris of rather lighter colour, classed as medium. In all the hair was black and woolly. The Ekoi are also distinguished by having beards, but the absence of hair on the face of the others may be natural or artificial. Amongst the Congo tribes there appears to be little variation in the pigmentation of the skin and character of the hair. The Bushongo, with the exception of one individual (sooty black), are classed as dark brown (class 3); it is also so among the Basoko, but among the Sango there were three individuals of class 2—the "sooty black" class. The Sango evidently tend to a greater degree of pigmentation. In most of the crania of Batetela the two upper central incisors have been extracted in youth; the crania from the Niger Delta show no dental mutilations, nor does Mr. Talbot mention dental deformity as a character of the Nigerian tribes. One of the crania in Mr. Talbot's collection, which belongs to the group which he suspected to be of Congo origin,

shows the upper incisor teeth filed to a peg shape. All the observed males of the Sango tribe show "pegging" of the upper incisors; six of the Basoko men and two of the women show this mutilation; so do those members of the miscellaneous Congo group from the north-east part of the Congo Free State.

Summary.—This paper deals with anthropological observations made on small and random samples of tribes of the Congo Free State and British Nigeria and of certain small collections of crania.

1. In British Nigeria the negro tribes are of several types. Crania from the Niger Delta and observations on a miscellaneous group of natives to the west of the Cross River show that there is a well-marked type of West African negro, low of stature, relatively long head, with the skull decidedly flattened from side to side in the parietal region. Many of the physical characters of this type can be recognised in the Sango and other Congo tribes bordering on the Sudan. In head form, although not in stature, the Dinka and Fur of the Nilotic tribes resemble the Nigerian type.

2. A type of negro sharply contrasted in head form to the laterally compressed Nigerian type is the Congolese. In this the head bulges laterally in the parietal region; the type is wide-headed and brachycephalic, the width being especially great when contrasted with the height. The Batetela, a tribe of medium height, and the Basoko, of low stature, living in the eastern and central regions of the Congo Free State, may be regarded as examples of this type. The Nyam-Nyam and Burun tribes of the Upper Nile region show an approach to this type.

3. The Korawp, a Nigerian tribe towards the frontier of the German Cameroons, represents what Sir Harry Johnston has named the "Forest-negro type." The stature is short, the arms long, the face, the head and nose massive, but the head is proportionally long as in most of the northern negro tribes. Although the Bushongo, a Congo tribe, are tall when compared with the Korawp, yet they show many of the features of the Forest-negro type—the massive head, great span, massive nose which is relatively narrow, with very wide and short face. In other points they resemble the Nyam-Nyam of the Sudan rather than the Korawp.

4. There remains over a group of tribes such as the Ekoi and Kabila of Nigeria, the Fertit and Bongo of the Nile region, which have no outstanding character; in stature, span, face, head, pigmentation and nose they approach the negro average.

5. To account for the present distribution of the negro tribes in the equatorial part of Africa one must assume: (a) There has been a free intermigration; (b) That in their evolution the tendency of one tribe has been towards the accentuation of one set of characters, in another tribe another set. Thus in the Dinka, high stature and narrow-headedness have become marked characters; in the typical Nigerians low stature and narrow head; in the Basoko, a wide short head and low stature; in the Buruns, a wide head and high stature. Interbreeding may have played a part; if it had played a great part, we should have found a greater physical uniformity than there is. The influence of Arab blood has probably been exaggerated.

TABLE I.—STATURE.

Race.	Sex.	No.	Mean.	1350- 1424	1425- 1499	1500- 1574	1575- 1649	1650- 1724	1725- 1799	1800- 1874	1875- 1924
I.											
Ekoï	—	23	1709	—	—	1	4	12	4	1	1
„	—	1	—	—	—	1	—	—	—	—	—
Korawp	—	13	1676	1	1	—	2	2	7	—	—
„	—	4	1579	—	—	4	—	—	—	—	—
Kabila	—	10	1727	—	—	—	2	5	2	1	—
Miscell. (Niger)	—	9	1694	—	—	—	2	6	1	—	—
II.											
Bushongo	—	18	1750	—	—	—	2	5	8	3	—
„	—	2	1664	—	—	—	1	1	—	—	—
Basoka	—	11	1658	—	—	2	3	4	2	—	—
„	—	4	1524	—	1	3	—	—	—	—	—
Sango	—	10	1688	—	—	—	2	5	3	—	—
Miscell.	—	22	1652	—	—	2	8	9	3	—	—
„	—	12	1561	—	2	4	6	—	—	—	—
III.											
Fertit	—	5	1708	—	—	—	—	—	—	—	—
Bongo	—	7	1692	—	—	—	—	—	—	—	—
Burun	—	43	1759	—	—	—	—	—	—	—	—
Fur	—	15	1682	—	—	—	—	—	—	—	—
Nyam-Nyam	—	10	1724	—	—	—	—	—	—	—	—
Dinka	—	60	1801	—	—	—	—	—	—	—	—

I. Niger Group.

II. Congo Group.

III. Sudan Group (from Professor Waterston's Report of Dr. MacTier Pirrie's observations).

TABLE II.
RELATION OF SPAN TO STATURE.

Race.	Sex.	No.	Mean.	A.	B.	1500- 1574	1575- 1649	1650- 1724	1725- 1799	1800- 1874	1875- 1949	1950- 2024	
I.													
Ekoï	...	—	23	1770	61	103·5	—	1	8	6	6	2	—
„	—	1	1575	40	102·6	—	1	—	—	—	—	—
Korawp	...	—	13	1799	122	107	2	1	1	1	6	2	—
„	...	—	4	1656	77	105	1	3	—	—	—	—	—
Kabila	...	—	10	1778	51	102·4	—	1	1	6	2	—	—
Miscell.	...	—	9	1744	50	103	—	1	2	4	2	—	—
II.													
Bushongo	...	—	18	1847	97	105	—	—	2	5	4	4	3
„	...	—	2	1760	96	105·7	—	—	1	—	1	—	—
Basoko	...	—	11	1725	67	104	—	2	4	2	3	—	—
„	...	—	4	1524	—	100	—	—	—	—	—	—	—
Sango	...	—	10	1745	57	103·5	—	—	—	—	—	—	—
Miscell.	...	—	22	1737	85	105	—	—	—	—	—	—	—
„	...	—	12	1609	48	103	—	—	—	—	—	—	—
III.													
Fertit	...	—	5	1762	54	103	—	—	—	—	—	—	—
Fur	—	15	1769	87	104	—	—	—	—	—	—	—
Bongo	...	—	7	1795	103	106	—	—	—	—	—	—	—
Nyam-Nyam	...	—	10	1822	98	105·7	—	—	—	—	—	—	—
Burun	...	—	43	1834	75	104·2	—	—	—	—	—	—	—
Dinka	...	—	60	1877	76	104·1	—	—	—	—	—	—	—

A. The amount by which the span exceeds the stature.

B. The relationship of span to stature, Group III, is taken from Professor Waterston's Report.

TABLE III.—NOSE MEASUREMENTS.

Race.	Sex.	No.	Mean.	A.	Length.					Mean.	Width.					
					35-39	40-44	45-49	50-54	55-59		30-34	35-39	40-44	45-49	50-54	55-59
I.																
Ekoi	...	24	45.2	95	1	9	11	3	—	42	—	1	13	10	—	—
Korawp	...	13	46.2	98	1	3	4	5	—	45.3	—	1	3	8	—	1
"	...	4	43.2	96	—	3	1	—	—	41.7	—	1	2	1	—	—
Kabila	...	10	47.2	99	—	1	7	2	—	46.7	—	1	1	5	3	—
Miscell.	...	9	44.7	100	1	3	4	7	—	44.8	—	1	2	5	1	—
II.																
Bushongo	...	18	48.8	90	—	1	10	7	—	44.3	—	—	9	7	2	—
"	...	2	45	92	—	1	1	—	—	41.5	—	—	2	—	—	—
Basoko	...	11	43	100.6	3	3	5	—	—	43.3	—	1	6	4	—	—
"	...	4	40	90.2	2	1	1	—	—	37	1	2	1	—	—	—
Sango	...	10	41.9	101.9	4	3	3	—	—	42.7	—	1	7	2	—	—
Miscell.	...	24	43.6	96	1	14	7	2	—	42.2	2	4	11	7	—	—
"	...	11	41.5	98.5	3	6	2	—	—	41	—	3	7	1	—	—
III.																
Fertit	...	5	43.4	99	—	—	—	—	—	43	—	—	—	—	—	—
Fur	15	42.7	99.5	—	—	—	—	—	42.5	—	—	—	—	—	—
Bongo	...	7	44.4	95	—	—	—	—	—	42.2	—	—	—	—	—	—
Nyam-Nyam	...	10	44.9	97	—	—	—	—	—	43.7	—	—	—	—	—	—
Burun	...	43	44	97	—	—	—	—	—	42.6	—	—	—	—	—	—
Dinka	...	60	44	93	—	—	—	—	—	40.9	—	—	—	—	—	—

TABLE IV.
BIZYGOMATIC WIDTH.

Race.	Sex.	No.	Mean.	115- 19	120- 24	125- 29	130- 34	135- 39	140- 44	145- 49	150- 55
<i>I. Living.</i>											
Ekoi	22	134	—	—	3	9	8	1	1	—
Korawp	13	138·4	—	—	1	3	4	2	1	2
"	4	124·5	—	2	2	—	—	—	—	—
Kabila	10	138·3	—	—	—	1	6	2	1	—
Miscell.	9	136	—	—	1	3	3	2	—	—
<i>II. Living.</i>											
Bushongo	18	143·7	—	—	—	3	2	7	2	4
Basoko	11	128	4	1	1	2	1	1	1	—
"	4	125	—	2	1	1	—	—	—	—
Sango	10	137	—	—	2	2	1	3	1	1
Miscell.	21	134	2	1	2	4	6	4	1	1
"	11	130	2	1	2	3	2	1	—	—
<i>III. Crania.</i>											
Ekoi	3	131	—	—	2	—	1	—	—	—
Niger Delta	2	132	—	—	1	1	—	—	—	—
" "	1	131	—	—	—	—	—	—	—	—
" Type	1	120	—	—	—	—	—	—	—	—
Batetela	5	133	—	—	—	—	—	—	—	—
"	5	120	—	—	—	—	—	—	—	—
Bantu (Shrubsall)	—	—	129	—	—	—	—	—	—	—	—
Ashanti "	—	—	121·5	—	—	—	—	—	—	—	—
<i>IV. Nilotic Tribes (Waterston).</i>											
Bongo	7	133·4	—	—	—	—	—	—	—	—
Fertit	5	138	—	—	—	—	—	—	—	—
Fur	15	139·4	—	—	—	—	—	—	—	—
Nyam-Nyam	10	141·2	—	—	—	—	—	—	—	—
Burun	43	136·5	—	—	—	—	—	—	—	—
Dinka	60	138	—	—	—	—	—	—	—	—

TABLE V.
NASO-ALVEOLAR LENGTH.

Race.	Sex.	No.	Mean.	45-49	50-54	55-59	60-64	65-69	70-74	75-79
<i>I. Living.</i>										
Ekoi	—	23	61·8	—	—	10	8	3	2	—
Korawp	—	13	64	—	2	—	5	5	1	—
"	—	4	56·5	—	1	3	—	—	—	—
Kabila	—	10	64·5	—	—	1	5	3	—	1
Miscell.	—	9	57	1	1	5	1	1	—	—
<i>II. Living.</i>										
Bushongo	—	18	64	—	—	4	6	6	2	—
Basoko	—	11	60·7	—	1	4	3	2	1	—
"	—	4	54	—	3	1	—	—	—	—
Sango	—	9	59·3	—	1	5	1	2	—	—
Miscell.	—	20	60·1	1	1	4	12	1	1	—
"	—	11	60	—	—	5	5	1	—	—
<i>III. Crania.</i>										
Ekoi	—	2	67	—	—	—	—	2	—	—
Niger Delta	—	3	49·6	2	1	—	—	—	—	—
" "	—	1	68	—	—	—	—	—	—	—
Niger Type	—	1	63	—	—	—	—	—	—	—
Batetela	—	5	63	—	—	—	—	—	—	—
"	—	5	60	—	—	—	—	—	—	—
Bantu (Shrubsall)	—	—	69	—	—	—	—	—	—	—
Ashanti "	—	—	64·5	—	—	—	—	—	—	—
<i>IV. Nilotic Tribes (Waterston).</i>										
Bongo	—	7	64·6	—	—	—	—	—	—	—
Fertit	—	5	63	—	—	—	—	—	—	—
Fur	—	15	65·7	—	—	—	—	—	—	—
Nyam-Nyam	—	10	64·3	—	—	—	—	—	—	—
Burun	—	43	65	—	—	—	—	—	—	—
Dinka	—	60	69·6	—	—	—	—	—	—	—

TABLE VI.
PROPORTION OF LENGTH OF FACE TO BREADTH.

Race.	Sex.	No.	Mean.	35-39	40-44	45-49	50-54
<i>I. Living.</i>							
Ekoi	—	22	46	—	10	8	4
Korawp	—	13	47	—	—	—	—
"	—	4	45·4	—	—	—	—
Kabila	—	10	47	—	—	—	—
Miscell.	—	9	42	—	—	—	—
<i>II. Living.</i>							
Bushongo	—	18	44·4	—	10	8	—
Basoko	—	11	47·5	—	—	—	—
"	—	4	43	—	4	—	—
Sango	—	9	43	2	3	3	1
Miscell.	—	21	44·7	2	9	6	4
"	—	11	46	—	—	—	—
<i>III. Crania.</i>							
Ekoi	—	3	51	—	—	—	—
Niger Delta	—	2	38	—	—	—	—
" "	—	1	52	—	—	—	—
" "	—	1	52	—	—	—	—
Batetela	—	5	47	—	—	—	—
"	—	—	49	—	—	—	—
Bantu (Shrubsall)	—	—	53	—	—	—	—
Ashanti "	—	—	53	—	—	—	—
<i>IV. Nilotic Tribes (Waterston).</i>							
Bongo	—	7	48·4	—	—	—	—
Fertit	—	5	45	—	—	—	—
Fur	—	15	47	—	—	—	—
Nyam-Nyam	—	10	44	—	—	—	—
Burun	—	43	47·6	—	—	—	—
Dinka	—	60	50	—	—	—	—

TABLE VII.
CHARACTER OF FOREHEAD IN NIGERIAN TRIBES.

	Ekoi (24).	Korawp (17).	Kabila (10).	Miscellan. (9).
High	10	11	10	4
Low	1	4	—	4
Broad	12	13	4	1
Narrow	8	4	5	5
Not receding	23	17	3	7
Slightly receding	1	—	—	1
Much receding	—	—	—	1
Medium height... ..	10	2	—	—
Medium breadth	—	—	1	—

TABLE VIII.
MAXIMUM BREADTH OF HEADS.

Race.	Sex.	No.	Mean.	115- 19	120- 24	125- 29	130- 34	135- 39	140- 44	145- 49	150- 54	155- 159
<i>I. Living.</i>												
Ekoï	23	135·5	—	—	2	4	13	3	—	1	—
Korawp	...	12	138	—	—	—	4	2	3	3	—	—
Kabila...	...	9	135	—	—	2	4	1	2	—	—	—
Miscell.	...	9	136	—	—	1	3	3	2	—	—	—
<i>II. Living.</i>												
Bushongo	...	17	140·5	—	—	—	3	5	7	1	1	—
Basoko	...	11	139·2	—	—	—	2	4	3	1	1	—
Sango	10	135·3	—	—	1	3	5	1	—	—	—
Miscell.	...	23	134	—	1	2	8	7	5	—	—	—
<i>III. Crania.</i>												
Ekoï	3	150·5	—	—	—	—	—	1	—	1	1
Niger Delta	...	3	136·5	—	—	—	1	1	1	—	—	—
Gambian	...	19	135	—	—	3	5	6	5	—	—	—
Nigerian	...	38	133·2	1	1	7	14	8	6	1	—	—
Gaboon	...	23	135·2	—	—	3	7	7	6	—	—	—
Batetela	...	50	138·5	—	—	—	—	—	—	—	—	—
"	...	27	130·9	—	—	—	—	—	—	—	—	—
<i>IV. Nilotic Tribes.</i>												
Nyam-Nyam	...	10	141·5	—	—	—	—	—	—	—	—	—
Fur	15	134·4	—	—	—	—	—	—	—	—	—
Fertit	5	138·8	—	—	—	—	—	—	—	—	—
Bongo	7	134·4	—	—	—	—	—	—	—	—	—
Burun	43	140	—	—	—	—	—	—	—	—	—
Dinka	60	132	—	—	—	—	—	—	—	—	—

In Groups I, II, and IV, 10 mm. have been deducted to represent the soft covering parts of the skull. The measurements of Group IV are from Professor Waterston's "Report on Dr. MacTier Pirrie's measurements." The Nigerian, Gambian (Upper Guinea), and Gaboon cranial measurements are from the "Catalogue of the Museum of the Royal College of Surgeons, England," while those of the Batetela are from Professor Pearson's measurements.

TABLE IX.
MAXIMUM LENGTH OF HEADS.

Race.	Sex.	No.	Mean.	160- 64	165- 69	170- 74	175- 79	180- 84	185- 89	190- 94	195- 99
<i>I. Living.</i>											
Ekoi	23	183·3	—	—	2	4	11	4	2	—
Korawp	13	187·7	—	—	1	1	2	2	6	1
Kabila	9	183	—	—	2	—	3	3	1	—
Miscell.	9	184	—	—	—	1	5	1	2	—
<i>II. Living.</i>											
Bushongo	18	183·5	—	—	3	2	7	3	1	2
Basoko	11	174·7	1	1	2	5	2	—	—	—
Sango	10	182·5	—	—	1	2	4	2	1	—
Miscell.	20	176	—	—	6	7	4	3	—	—
<i>III. Crania.</i>											
Ekoi	3	187·3	—	—	—	—	—	3	—	—
Niger Delta	4	181·3	—	—	—	3	—	1	—	—
Gambian	19	186	—	1	—	2	2	9	4	1
Nigerian	38	181·6	—	3	5	5	12	8	5	—
Gaboon	24	178·5	—	2	7	4	3	7	1	—
Batetela	50	177·8	—	—	—	—	—	—	—	—
„	26	171·4	—	—	—	—	—	—	—	—
<i>IV. Nilotic Tribes.</i>											
Nyam-Nyam	10	182·8	—	—	—	—	—	—	—	—
Fur	15	183·8	—	—	—	—	—	—	—	—
Fertit	5	181	—	—	—	—	—	—	—	—
Bongo	7	179·2	—	—	—	—	—	—	—	—
Burun	43	180·7	—	—	—	—	—	—	—	—
Dinka	60	186	—	—	—	—	—	—	—	—

9 mm. have been deducted from the measurements made in the head of the living. The Gambian crania include those from Upper Guinea and Sierra Leone, in the Museum, Royal College of Surgeons; the Nigerian from Sierra Leone and the German Cameroons. The means for the Batetela crania were given to me by Professor Karl Pearson. Group IV is from Professor Waterston's Report.

TABLE X.
RELATION OF BREADTH TO LENGTH.

Race.	Sex.	No.	Mean.	60-64	65-69	70-74	75-79	80-84	85-89	90-94
<i>I. Living.</i>										
Ekoï	—	23	74·5	—	—	16	5	2	—	—
Korawp	—	13	73·8	—	—	9	4	—	—	—
Kabila	—	9	73·8	—	2	2	4	1	—	—
Miscell.	—	9	73·9	—	1	3	5	—	—	—
<i>II. Living.</i>										
Bushongo	—	18	76·8	—	—	3	11	4	—	—
Basoko	—	11	79·5	—	—	2	4	3	2	—
Sango	—	10	74·2	—	—	6	4	—	—	—
Miscell.	—	23	76·6	—	1	7	8	7	—	—
<i>III. Crania.</i>										
Ekoï	—	3	80·2	—	—	—	1	2	—	—
Niger Delta	—	4	75·1	—	1	2	1	—	—	—
Gambian	—	19	72·6	—	3	10	6	—	—	—
Nigerian	—	38	75·5	2	5	15	14	2	—	—
Gaboon	—	24	75·8	—	2	6	11	5	—	—
Batetela	—	50	77·8	—	—	—	—	—	—	—
"	—	20	76·4	—	—	—	—	—	—	—
<i>IV. Nilotic Tribes.</i>										
Nyam-Nyam	—	—	77·6	—	—	—	—	—	—	—
Fur	—	—	72·8	—	—	—	—	—	—	—
Fertit	—	—	76·2	—	—	—	—	—	—	—
Bongo	—	—	74·9	—	—	—	—	—	—	—
Burun	—	—	77·3	—	—	—	—	—	—	—
Dinka	—	—	71	—	—	—	—	—	—	—

TABLE XI.
HEIGHT OF CRANIA.

No.		Race.	I.	II.	III.	IV.	V.
1	Cranium	... Ekoi... ..	105	117	134	78	1540 cc.
2	"	... "	96	116	119	81	1420 "
3	"	... "	103	125	131	80	1330 " ?
4	"	... "	92	—	—	—	1320 "
5	"	... Nigerian type ...	97	116	130	87	1140 "
6	"	... Nigerian	103	121	141	92	1190 "
7	"	... "	99	119	145	88	1360 " ?
8	"	... "	98	125	136	87	1370 "
9	"	... " (boy)	90	109	130	93	1210 "
10	"	... "	94	114	132	87	1170 "
3	Crania	... Ekoi... ..	101	119·6	128	79·6	1430 "
3	"	... Nigerian	100	121·6	140·6	89	1240 "
5	"	... Batetela	99·2	115·2	132	82	1342 "
5	"	... Ancient Egyptian ...	107	123	141	87	—
5	"	... Batetela	93·5	110	124	82·6	1206 "
50	Pearson...	... "	—	—	133·8	—	—
26	"	... "	—	—	127·5	—	—
108	Shrubsall	... Bantu	—	—	136·8	—	—
57	"	... Ashanti	—	—	131·8	—	—
10	Waterston	... Nyam-Nyam	—	123·8	—	87	—
15	"	... Fur	—	121·6	—	90	—
5	"	... Fertit	—	123·4	—	89	—
7	"	... Bongo	—	123·7	—	92	—
43	"	... Burun	—	123	—	87	—
60	"	... Dinka	—	123·8	—	93	—

Nos. 1-5 are the crania brought home by Mr. Talbot ; 6-10, the Nigerian Delta skulls belonging to Mr. Corner.

I. Highest point of cranial vault above plane of orientation (see Figs. 1A and 1B).

II. Ditto above upper border of meatus (see Figs. 1A and 1B).

III. Basi-bregmatic length.

IV. Proportion of meatal height to greatest width.

V. Capacity.

MR. TORDAY'S MEASUREMENTS OF TRIBES IN THE CONGO FREE STATE.

Group I, Bushongo. Group II, Basoko. Group III, Sango. Group IV, Miscellaneous.

H.L. = Maximum head length.
 H.B. = Maximum head breadth.
 F.L. = Naso-alveolar distance.
 F.B. = Bizygomatic dianeter.
 N.L. = Nose length.
 N.B. = Width of nose at alæ.

St. = Stature.

Sp. = Span.

Index of each pair of measurements—

Nose (L.B.)

Face (W.L.)

Head (L.W.)

				H.L.	H.B.	Ind.	F.L.	E.B.	Ind.	N.L.	N.B.	Ind.	St.	Sp.	Span- Stat.
Group I. Bushongo.															
18 M., 2 F.															
No.	1 (M.)	...	...	188	141	75	67	154	43	49	45	91	1855	1965	110
"	3 "	...	...	204	153	75	61	144	42	51	42	82	1798	1946	148
"	4 "	...	...	193	157	81	63	154	41	46	43	97	1701	1798	97
"	6 "	...	...	186	152	81	69	142	49	55	45	81	1750	1778	28
"	7 "	...	...	204	171	83	69	151	46	51	50	97	1790	1874	84
"	8 "	...	...	192	150	78	58	152	44	45	50	111	1700	1800	100
"	9 "	...	...	192	149	77	63	142	44	48	46	102	1649	1724	75
"	10 "	...	...	197	150	76	71	152	46	53	48	90	1735	1852	117
"	11 "	...	...	190	148	78	60	145	41	51	41	80	1683	1746	63
"	12 "	...	...	183	142	77	65	139	46	49	45	92	1778	1920	142
"	13 "	...	...	196	151	77	63	131	48	48	46	97	1825	1970	145
"	14 "	...	...	189	148	78	57	144	42	48	45	91	1755	1922	167
"	15 "	...	...	182	146	80	65	133	49	46	42	91	1696	1798	102
"	16 "	...	...	181	141	78	59	135	43	42	40	95	1705	1780	175
"	17 "	...	...	199	152	76	63	142	43	47	43	91	1630	1720	90
"	18 "	...	...	190	145	76	59	140	42	49	47	95	1850	1920	70
"	19 "	...	...	192	151	78	69	145	47	49	40	81	1770	1880	10
"	20 "	...	...	195	161	82	69	143	48	54	40	74	1788	1873	115
"	2 (F.)	...	...	188	141	75	60	139	43	46	42	91	1694	1710	116
"	5 "	...	...	188	132	70	64	134	47	44	41	93	1635	1710	75
Group II. Basoko.															
11 M., 4 F.															
No.	12 (M.)	...	...	191	160	83	54	149	36	38	38	100	1710	1810	100
"	15 "	...	...	185	145	78	70	133	52	47	40	85	1575	1610	35
"	17 "	...	...	186	156	84	65	143	45	47	42	89	1642	1667	25
"	18 "	...	...	170	154	90	62	139	44	44	42	85	1730	1823	93
"	19 "	...	...	190	158	72	58	116	50	35	44	125	1570	1705	135
"	25 "	...	...	186	146	78	56	117	48	37	40	108	1650	1675	35
"	27 "	...	...	188	141	75	62	117	53	47	44	93	1765	1872	107
"	29 "	...	...	188	143	76	56	113	50	44	45	102	1570	1620	50
"	31 "	...	...	175	152	87	63	131	48	44	45	102	1695	1748	53
"	33 "	...	...	183	148	81	65	122	43	45	47	104	1710	1765	55
"	36 "	...	...	179	150	83	57	129	44	45	48	106	1620	1685	65
"	44 (F.)	...	...	178	140	78	52	124	42	35	38	108	1560	1560	3
"	45 "	...	...	178	144	81	52	122	42	38	32	84	1500	1525	25
"	46 "	...	...	182	144	79	57	130	43	46	43	93	1568	1560	—8
"	59 "	...	...	171	126	73	54	125	43	41	36	87	1470	1480	10

MR. TORDAY'S MEASUREMENTS OF TRIBES IN THE CONGO FREE STATE—continued.

	H.L.	H.B.	Ind.	F.L.	F.B.	Ind.	N.L.	N.B.	Ind.	St.	Sp.	Span- Stat.
<i>Group III. Sango.</i>												
10 Males.												
No. 3 (M.)... ..	198	147	74	—	131	—	46	41	87	1720	1710	—10
" 5 "	190	140	73	63	125	50	42	45	107	1650	1730	80
" 6 "	182	146	80	58	145	40	35	41	120	1712	1780	68
" 8 "	195	143	73	68	125	47	39	39	100	1658	1683	25
" 9 "	189	143	75	51	141	36	40	42	110	1640	1740	100
" 10 "	187	149	79	58	140	41	44	42	95	1737	1825	88
" 13 "	192	138	72	59	128	46	39	44	112	1750	1840	90
" 14 "	192	154	80	55	150	36	39	44	112	1725	1780	55
" 16 "	202	148	73	67	137	49	48	47	98	1678	1760	82
" 20 "	188	145	77	55	132	41	47	40	85	1592	1610	18
<i>Group IV. Miscellaneous.</i>												
24 Males, 11 Females.												
Baluba (M.)	189	142	75	61	139	44	45	44	97	1560	1650	90
Bangelima "	178	143	80	59	115	51	45	40	89	1678	1718	40
Momou "	180	144	80	64	132	48	42	42	100	1690	1820	130
Nambetu "	191	132	69	39·5	123	32	41	42	102	1665	1730	65
Mongwi "	188	140	74	60	129	46	43	39	90	1614	1655	41
Mongala "	185	137	74	—	136	—	41	39	95	1665	1724	59
Bangala "	174	143	82	52	136	38	41	46	112	1655	1757	102
" "	181	143	79	62	133	46	47	44	93	1650	1758	108
" "	184	147	79	64	137	46	44	44	100	1785	1905	120
Babula "	187	152	81	63	144	43	42	45	107	1710	1775	65
Agande "	192	150	78	64	150	42	41	45	109	1780	1920	140
" "	188	154	81	63	132	47	46	34	73	1605	1708	103
Topoke "	179	138	77	58	131	44	40	39	97	1580	1650	90
" "	196	149	76	61	142	43	41	44	107	1660	1720	60
Nongo "	194	145	74	—	130	—	40	42	105	1637	1682	45
" "	176	148	84	59	135	43	42	44	104	1558	1595	37
Babwe "	177	148	89	49	135	36	41	45	109	1576	1780	204
Bashongo "	194	143	73	—	145	—	47	46	97	1644	1783	139
Yambenga "	181	151	83	69	139	49	49	46	93·8	1670	1773	103
Balisi "	184	147	80	62	116	53·4	37	34	91	1582	1670	88
Likwangulo "	181	142	78	59	125	47	43	37	86	1630	1785	155
Gombe "	187	140	75	58	140	41	50	45	90	1640	1665	25
Bapoto "	189	153	81	64	148	43	46	47	102	1740	1900	160
" "	180	149	82	75	141	53	53	42	79	1682	1790	108
Gombe (F.)	179	142	79	60	129	46	41	43	104	1485	1560	75
" "	177	127	71	59	115	52	41	40	97	1460	1515	55
" "	178	—	—	57	129	44	40	39	97	1505	1660	155
" "	176	147	83	59	113	52	39	40	102	1579	1657	78
" "	183	140	76	—	138	—	43	44	102	1618	1640	22
Bapoto "	182	139	76	61	134	45	46	44	95	1625	1685	60
" "	182	138	75	56	130	43	43	40	93	1540	1605	65
Mongwi "	182	141	77	58	143	41	39	36	92	1619	1682	63
" "	187	143	76	66	137	48	47	39	83	1572	1653	81
" "	178	137	77	56	121	46	37	40	108	1575	1595	20
Mongala "	176	141	80	60	134	44	41	47	114	1510	1561	51

MR. TALBOT'S MEASUREMENTS OF NIGERIAN TRIBES.

Group I, Ekoi. Group II, Kabila. Group III, Korawp. Group IV, Miscellaneous.

Sex.	H.L.	H.B.	Ind.	F.L.	F.B.	Ind.	N.L.	N.B.	Ind.	St.	Sp.	Ind.
<i>Group I.</i>												
No. 1. Ekoi (M.) ...	194	148	763	63	—	—	45	41	911	1701	1803	102
" 2. " " ...	192	141	734	60	140	429	43	46	1069	1677	1701	24
" 3. " " ...	201	148	736	58	140	416	45	40	889	1651	1676	25
" 4. " " ...	193	159	824	57	142	406	49	41	838	1651	1727	76
" 5. " " ...	192	148	771	64	139	462	43	43	1000	1626	1676	50
" 6. " " ...	188	148	787	55	130	423	40	41	958	1676	1752	24
" 7. " " ...	191	146	764	57	132	432	46	40	870	1727	1728	1
" 8. " " ...	201	148	736	64	144	444	45	39	867	1702	1778	76
" 9. " " ...	200	145	725	73	149	492	50	40	800	1677	1854	177
" 10. " " ...	193	143	741	64	143	447	48	46	958	1905	1981	76
" 11. " " ...	194	148	763	63	141	446	48	45	938	1778	1879	101
" 12. " " ...	179	150	838	68	136	500	48	47	979	1728	1829	101
" 13. " " ...	191	151	791	56	135	415	40	44	1100	1575	1600	25
" 14. " " ...	192	148	771	69	140	492	52	42	807	1702	1727	25
" 15. " " ...	191	145	759	59	138	427	40	47	1175	1727	1677	49
" 16. " " ...	192	145	755	61	139	438	46	46	1000	1651	1828	177
" 17. " " ...	193	140	725	57	139	412	45	40	889	1702	1753	51
" 18. " " ...	196	145	740	70	141	496	48	40	833	1702	1804	102
" 19. " " ...	184	136	739	60	130	462	40	40	1000	1651	1701	50
" 20. " " ...	198	150	758	54	144	375	44	45	957	1804	1676	128
" 21. " " ...	183	135	738	55	133	413	41	40	976	1651	1702	51
" 22. " " ...	187	141	754	56	143	392	44	48	1090	1626	1778	152
" 23. " " ...	190	148	779	58	153	379	38	46	1210	1778	1905	127
Ekoi (F.) ...	184	146	793	53	137	387	44	41	893	1549	1600	51
<i>Group II.</i>												
" 1. Kabila (M.) ...	228 ?	138	600	64	143	447	49	47	959	1803	1828	25
" 2. " " ...	192	158	823	63	150	420	45	46	1022	1651	1753	102
" 3. " " ...	192	147	766	68	144	472	47	45	957	1702	1778	76
" 4. " " ...	191	151	791	64	148	432	46	46	1000	1702	1753	51
" 5. " " ...	199	139	698	75	143	524	55	53	964	1854	1880	26
" 6. " " ...	195	140	718	64	141	453	48	49	1020	1651	1651	—
" 7. " " ...	194	150	773	63	143	442	45	49	1089	1727	1702	25
" 8. " " ...	183	135	738	58	135	429	41	38	927	1651	1752	101
" 9. " " ...	183	144	787	61	142	429	47	44	935	1752	1752	—
" 10. " " ...	195	141	723	59 ?	141	418	44	46	1045	1677	1803	126

MR. TALBOT'S MEASUREMENTS OF NIGERIAN TRIBES—*continued*.

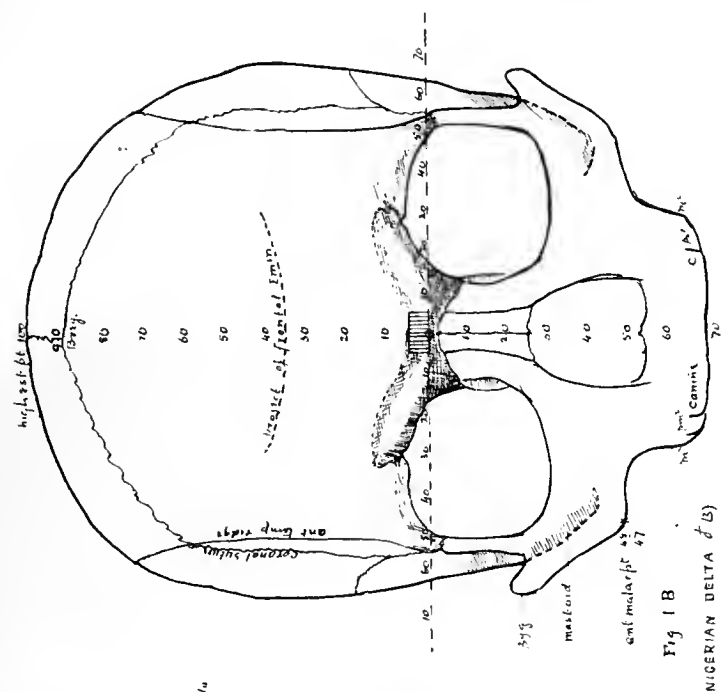
Sex.	H.L.	H.B.	Ind.	F.L.	F.B.	Ind.	N.L.	N.B.	Ind.	St.	Sp.	Ind.
<i>Group III.</i>												
No. 1. Korawp (M.)...	200	146	730	60	136	441	41	48	1170	1625	1701	76
„ 2. „ „ ...	197	146	741	62	144	423	43	48	1115	1702	1854	152
„ 3. „ „ ...	197	157	797	72	145	496	50	43	860	1753	1905	152
„ 4. „ „ ...	207	156	753	65	147	442	46	46	1000	1778	1956	178
„ 5. „ „ ...	187	143	765	53	130	400	39	40	1026	1473	1549	76
„ 6. „ „ ...	182	133	731	52	124	419	39	39	1000	1347	1448	101
„ 7. „ „ ...	194	151	778	62	144	423	49	47	959	1752	1879	127
„ 8. „ „ ...	193	151	782	67	137	493	50	45	900	1753	1804	52
„ 9. „ „ ...	203	152	749	66	147	449	50	57	1140	1778	1905	127
„ 10. „ „ ...	203	157	773	63	141	446	47	45	957	1753	1855	102
„ 11. „ „ ...	192	141	734	60	147	400	48	48	1000	1728	1855	127
„ 12. „ „ ...	196	142	724	64	142	450	49	47	959	1702	1804	102
„ 13. „ „ ...	199	142	714	69	138	500	47	44	935	1651	1752	101
„ 1. „ F. ...	195	140	718	58	132	439	42	41	976	1574	1549	25
„ 2. „ „ ...	185	146	789	53	130	400	46	45	978	1550	1651	101
„ 3. „ „ ...	189	137	725	59	128	451	42	37	881	1575	1677	102
„ 4. „ „ ...	189	138	730	54	132	400	41	42	1024	1550	1677	127
<i>Group IV.</i>												
„ 1. Efek (M.) ...	193	146	756	54	124	435	45	44	978	1702	1727	25
„ 2. „ „ ...	193	149	772	58	—	—	38	40	1053	1701	1778	77
„ 3. Uganda (M.) ...	191	137	717	56	133	421	46	42	913	1705	1728	23
„ 4. „ „ ...	193	141	731	56	146	383	45	48	1000	1651	1676	25
„ 5. „ „ ...	199	156	784	55	143	385	45	49	1089	1651	1753	102
„ 6. „ „ ...	190	147	774	49	135	362	42	44	1048	1625	1651	26
„ 7. Ibibio „ ...	190	153	805	57	133	429	44	45	1022	1753	1804	51
„ 8. Ibo (M.) ...	185	142	768	64	129	500	52	46	885	1626	1676	50
„ 9. „ „ ...	195	147	754	64	140	457	42	—	—	1727	1804	77

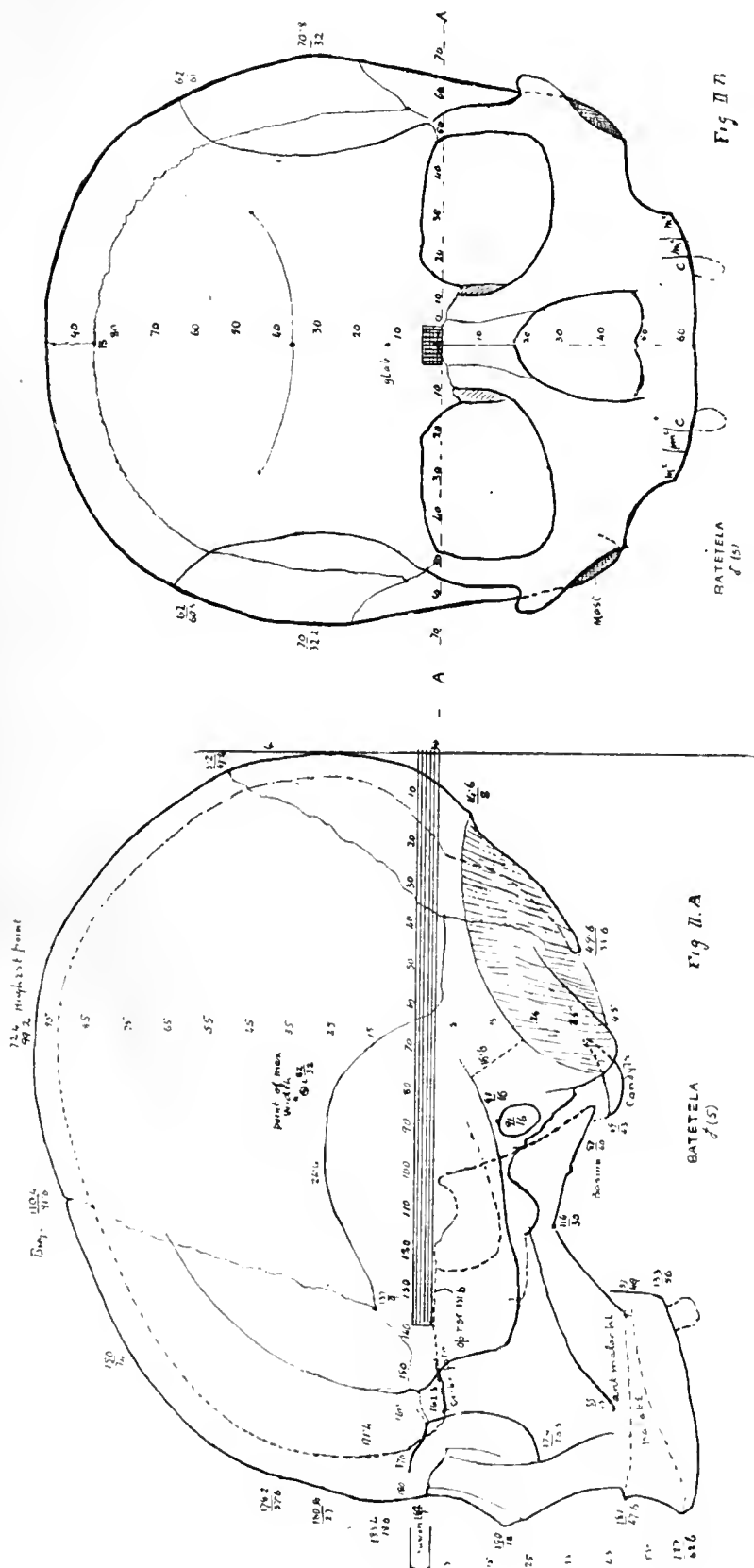
MEASUREMENTS OF CRANIA.

Nos. 1, 2, 3, 4, 5, crania brought from Oban district of British Nigeria by Mr. P. A. Talbot.

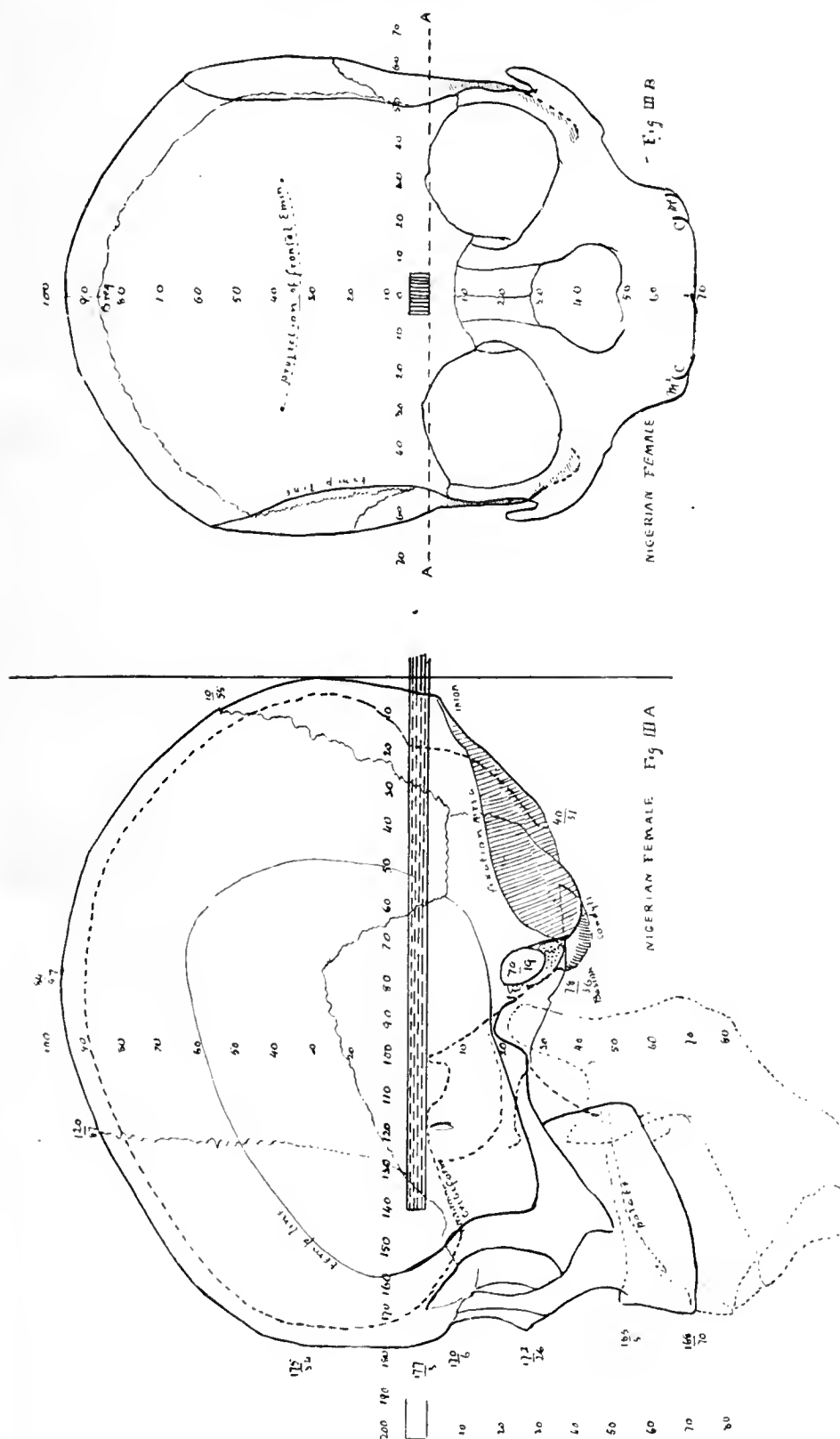
Nos. 6, 7, 8, 9, 10, crania from the Niger Delta belonging to Mr. Frank Corner, M.R.C.S.

	1	2	3	4	5	6	7	8	9	10
Sex	M.	M.	M.	♀ F.	♀ F.	M.	M.	M.	F.	M.
Age	30-40	30-50	30-50	30-40	40	30-40	30-40	40-50	40	15
Cubic Capacity ...	1540	1420	1330	1320	1140	1190	1360	1370	1170	1210
Brain length (bipolar) ...	172	176	166	166	167	161	172	166	162	165
Brain breadth (parietal)	141	136	145	135	122	121	123	133	121	111
Brain height (above sub-cerebral plane).	98	91	96	87	89.6	96	92	82	89	97
Skull length maximum...	187	188	187	180	175	179	186	179	179	178
Skull breadth „ ...	150	143	157	142	132	131	135	143	131	117
Skull height (sub-cerebral).	105	96	103	92	97	103	99	98	94	90
Skull height (meatal upper border).	117	116	125	—	116	119	119	124	113	109
Bimastoid breadth ...	108	—	112	112	117	123	108	115	120	95
Bizygomatic breadth ...	127	128	139	—	120	129	133	—	131	108
Naso-alveolar length ...	68	66	—	—	63	67	67	58	68	59
Interocular width (between angular processes of frontal).	27	33	—	—	28	30	23	23	25	22
Height of Orbit... ..	35	35	—	—	33	32	36	36	36	35
Width of Orbit	43	44	—	—	41	36	39	40	39	37
Length of Palate	58	56	—	—	56	56	64	53	51	54
Breadth at pm ² —pm ² ...	51	55	—	—	54	50	50	—	56	53
„ „ m ² —m ²	68	67	—	—	60	56	60	—	64	60

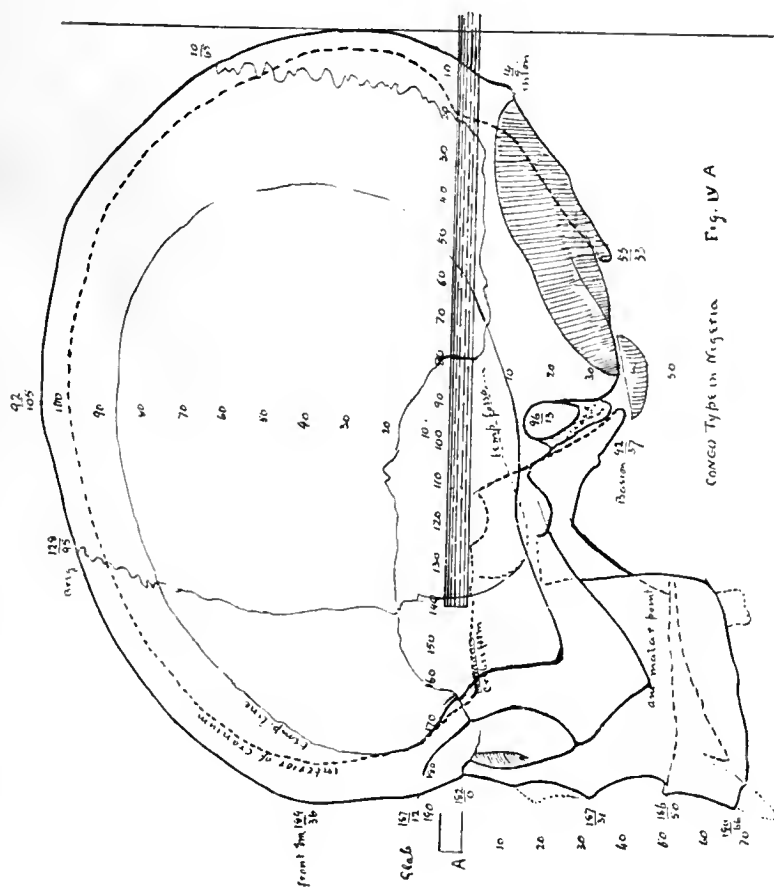
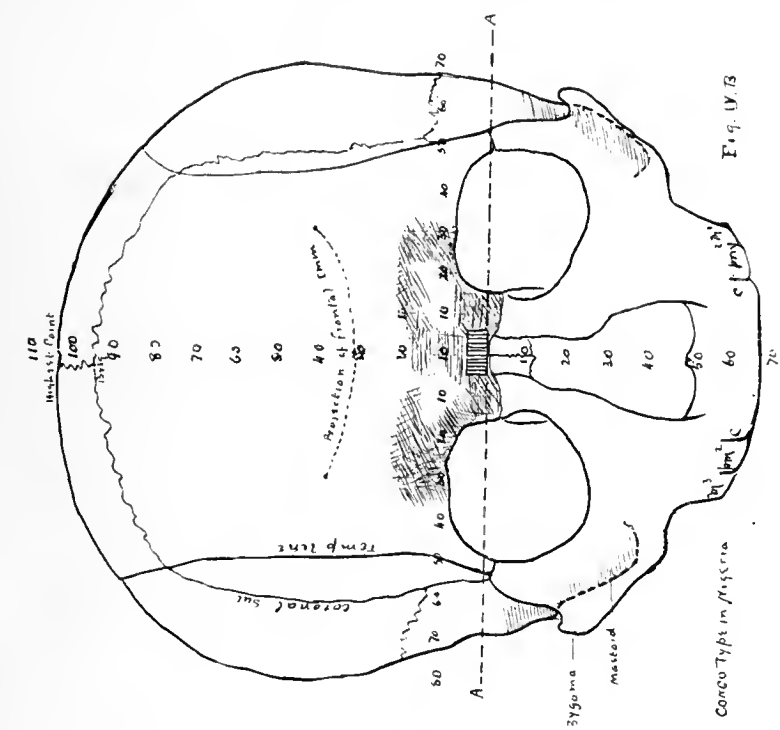




CERTAIN PHYSICAL CHARACTERS OF THE NEGROES OF THE CONGO FREE STATE AND NIGERIA.



CERTAIN PHYSICAL CHARACTERS OF THE NEGROES OF THE CONGO FREE STATE AND NIGERIA.





Explanation of Plates.

PLATE I. FIGS. IA AND IB. Profile and full-face craniometric drawings of three crania of males from the Niger Delta (Mr. Corner's collection), to represent the type distinguished as "Nigerian." The drawings represent a composite outline which has been made by taking the mean of the various measurements of the three crania. The crania are oriented on the subcerebral plane, represented by the lower border of the rod thrust within the cranial cavity. A stippled line represents the outline of the cranial cavity. The upper of the two numerals shown in the drawings indicates the position of a point in the antero-posterior plane, the lower on a vertical plane. The projection of the various parts of the face and its relationship of the zygomatic arches to the mastoid processes are shown. The drawings are made on millimetre paper, hence any measurement required may be made from them.

PLATE II. FIGS. IIA AND IIB. Profile and full-face craniometric drawings of five skulls of male Batetela to represent the type described in this paper as Congolese. (Crania in Museum, Royal College of Surgeons.) Compare the inter-parietal breadth, width of palate, and relationship of the mastoid processes to the zygomatic arches of Figs. IB and IIB, and the position of the auditory meatus, form of the base of the skull and plane of the palate in the profiles of IA and IIA. For further explanation, see Legend of Figs. IA and IB.

PLATE III. FIGS. IIIA AND IIIB. Profile and full-face drawings of the cranium of a female found with other crania (see Figs. IVA and IVB) in the Oban district of British Nigeria by Mr. Talbot. The cranium is of the "Nigerian" type. Explanation as in Figs. IA and IB.

PLATE IV. FIGS. IVA AND IVB. Profile and full-face craniometric drawings of three crania found by Mr. Talbot in the Oban district of British Nigeria. They are of the "Congolese" type.

SOME TECHNOLOGICAL NOTES FROM THE POMEROON DISTRICT,
BRITISH GUIANA. (PART III.)

BY DR. WALTER E. ROTH, Local Correspondent of the Royal Anthropological
Institute.

[WITH PLATES V-XIX.]

IN this article I propose dealing with open-work basketry, traps, and certain fans.

OPEN-WORK BASKETRY.

Open-work baskets are either made for temporary or permanent use, the former receptacles coming into being in the case of an Indian finding a supply of nuts, fruits, etc., out in the bush and happening to have nothing to bring it home in. Under such circumstances certain leaves are employed.

The leaf of the ite palm (*Mauritia Flexuosa*) is thus utilised by the Warrau women, who make a sort of spoon-shaped scoop out of it (Plate V, Fig. 1) by successively interlacing septa from alternate sides, starting with the outermost (Fig. 2). After some half-dozen or so have thus been interlaced, the remaining septa of each half of the leaf are plaited together into a tail, the two tails being finally crossed and tied along the distal margin of the basket. The Warraus call it a *horobihi*.

Arawak males employ the leaf of the manicole palm (*Euterpe oleracea*) for similar purposes of temporary expediency, in at least four different ways, as follows:—

(a) Having removed two comparatively short, but equal, lengths of midrib with attached septa, they are placed opposite one another and the septa on both sides plaited together (Fig. 3)¹. The bottom of the basket is subsequently closed in similar manner by commencing to plait at the lower extremity of each midrib (Fig. 4). Should the mouth of the basket prove too "open," an extra piece of midrib (*m*) with attached septa may finally be added. From its resemblance in general shape to the "adam's apple" of one of the howling monkeys, the Arawak name of the completed article is *itoro-oyóre*, *i.e.*, baboon-larynx.

(b) Again, four much longer, equal lengths of the leaf may be plaited together on the flat, by means of their contiguous septa, but in such a way that those on the

¹ For clearness sake, in this and the following figure, only the one-half of the basket is depicted.

outer side of each pair of midribs remain free for the present (Plate VI, Fig. 1). In the one variety of basket (Fig. 2)—they are both called by the one name, *wai-yari*, among the Arawaks—the midribs are bent from below up at a spot about between the third and fourth quarter of their length, the hitherto free septa being ultimately plaited together from below up so as to form a receptacle very much like the Suriana of the Caribs, etc., and like it carried on the back of the shoulders. Indeed, Im Thurn's description of the latter holds equally true for this form of *wai-yari*: "This basket is shaped like a slipper; the flat side, answering to the sole of the slipper, fits against the back of the carrier; a string is laced backward and forward across the open side, so as to keep the contents of the basket from falling up, and a strong and broad band . . . passes from the two upper corners of the basket across the forehead of the carrier so as to support the whole weight."¹ I have seen considerable weights of raw clay carried in these receptacles.

(e) In the second variety the two pairs of midribs are bent up at both ends (Plate VII, Fig. 1), and the outer sets of free septa plaited together into a common centre (*h*) on each side, to form ultimately, *i.e.*, when joined, the handle of what is practically a hand basket (Fig. 2).

(d) On the Pomeroon, with a single leaf, the midrib is sharply bent into three approximately equal portions into the shape of the letter L, the vertical bar of which is formed of the midrib doubled on itself (Fig. 3). The septa of the two constituents of this vertical stroke constitute the weft, while those on the horizontal bar (the bottom of the basket) constitute the warp. The free ends of the weft, from alternate sides, are plaited into one another and into the extremities of the warp to make the handle. This almost jug-shaped basket is also known as a *wai-yari* to the Arawaks.

On the Pomeroon the variations (b) (e) (d) may also be made from the turu palm (*Enocarpus baccaba*). Photographs of some of these temporary baskets are shown in Plate XI.

All baskets for permanent use are made by men, and manufactured in different styles according to the pattern of the foundation (*tuina-tuku*).² The parts of such a basket are named as follows:—An outside (*taro-makóndi*), inside (*toloko*), a bottom (*tuina*), and mouth (*tureroko-di*), with sometimes a bark-strap (*titimi*), by means of which it is suspended across the forehead. According to the purposes for which these articles are applied, they are spoken of in general as *Kwá-ke* and *Kau-uri* and used for crabs and cassava respectively. (The first term has probably given rise to the word "quake," a Creole term applied to all baskets indiscriminately). These are the main purposes served, but others may be observed, the *Kwá-ke*, for instance, often acting as a cage for animals and birds while being tamed, while a large *Kau-uri* turned upside down forms a very good hen-coop.

The *Kwá-ke* is made from the outside unscraped portions of split *itiriti* stems (*Ischnosiphon*), is characterised by a proportionately small mouth as compared with

¹ *Among the Indians of Guiana*, p. 280.

² Unless otherwise stated, all native names are given in Arawak.

its base, and, except at the foundation, has a pentagonal interspace between the plaiting strands. This interspace is spoken of as the "eye" (*takushi*). The foundation of the type specimen, the true *Kwá-ke*, is formed by binding a varying number of strands diagonally across a pair of others placed parallel (Plate VIII, Fig. 1), the extremities of all forming ultimately individual warps (*wa*); the number so employed will depend upon the size of basket required. Two or three warps are plaited around the length and breadth of the original pair of strands, and so keep the crossed ones in position (Fig. 2). The weft is next introduced, in the form of a very long strand (*we*), and the plait-work proceeded with until the limits of what will finally be the mouth is reached: the latter is finished off by weaving other pieces of strand twice round the projecting warps, which are bent down upon one another for the purpose.

A variation in the foundation can be made without any parallel strands by looping together the diagonally-placed ones in pairs, the number of such loops varying from two to six or more, according to the size of basket (Figs. 3 and 4). From the supposed resemblance of these loops at their junctions to the eyes of a certain fish (*Kasoroa*), found on low-water mud-banks (akin to that known to English boys as a "Jumper," "Four-eyes," etc.), this form of *Kwá-ke* is often spoken of as a *Kasoroa*, or *Kasoroa-(a)kushi*, i.e., eye.

Kau-uri baskets are manufactured of split mamuri (*Carludovica plumieri*), the mouth is much larger than the base, and the interspaces are hexagonal. Owing to the heavy weights of cassava which they are destined to carry, they must be made strong, and hence, if, as is sometimes the case when mamuri cannot be obtained, they should be made of *itiriti*, they will hardly last at all. Strips of a particular kind of bark act as a handle, which passes across the forehead. The type specimen of *Kau-uri* has a foundation of one series of strands, lying diagonally across another, and plaited together by means of a third, horizontal set (Plate IX, Fig. 1). Though the number of strands in each series is the same, the actual number employed will depend upon the size of basket: they all ultimately constitute the warp (*wa*). The result of this arrangement is a hexagon (Fig. 2). The weft (*we*), as long a strand as is obtainable, is now introduced (Fig. 3), and the concavity of the basket foreshadowed by sticking two small flat sticks (*y, z*) cross-wise through the interstices, and attaching an extra warp (*ewa*) at each angle of the figure. These six warps are known as the "children" (*chuka-tuka*), and no more are inserted throughout the whole of the plaiting. The circular, or rather spiral weft, is called the *akausugatin* or *todolebo*. The mouth is finally finished off by weaving strands thrice round the projecting warps, etc. It is this kind of basket which in the "old days" was often woven for protecting purposes over the gourds and earthen jars—a practice which is still occasionally followed: an illustration of such a one is to be seen in Rev. J. H. Bernau's *Missionary Labours, etc.*, p. 42, a work published in 1847.

In another kind of *Kau-uri*, the foundation is made of six strands, one of them being extra long to form the weft (*we*), all locked together in a hexagon

(Fig. 4). At each angle of the figure is introduced another warp, or "child" (Fig. 5), which becomes plaited in with the weft as it proceeds round and round; such "children" can be let in whenever the interspaces of the basket open out too much in the process of manufacture. From the fancied resemblance of this form of foundation to the view presented by a sloth when turning his back upon a visitor, this variety of *Kau-uri* derives its name of *haru-(m)inako*, i.e., sloth-anus.

A third kind of *Kau-uri* is the *bakoké*, the word signifying an eye-socket, the general contour of which the bottom of the completed basket has been likened to. The oval foundation (Plate X, Fig. 1) is formed of a single strand, the weft (*we*) bent upon itself to a length adapted for the size required, and fixed in position by a warp (*wa*), the extremities of which continue to lock the weft as it proceeds round and round itself in the course of manufacture (Figs. 2 and 3).

Another variation in this class of baskets is the *Kérémi*, a name given to a certain salt-water fish, the scales of which the interspaces bear comparison with; the completed article may thus be called a *Kérémi-(u)da* (i.e., scale), or *Kérémi-(a)kushi* (i.e., eye). The square foundation is formed of vertical and horizontal sets of strands crossed by diagonal ones (Fig. 4) reminding one somewhat of the pattern on an English cane-seated chair, and is limited by the introduction of the first weft (*we*). The sides are built up and proportionately raised as another and another of such wefts are successively brought into requisition. Indeed, the three characteristics of this *Kérémi* basket are the pattern of plait, a square foundation, and the separately introduced wefts. It is an article but rarely seen now in this district, and the specimen from which the illustration was drawn does not show quite as much regularity and uniformity in the crossing of the strands as is represented. I have reason to think that it is of Makusi origin.

TRAPS.

Traps and similar devices are employed for catching fish, some of the larger game, birds and rats. In this order I intend describing them:—

(A) *Fish-traps.*

The cylinder trap (Plate XII, Fig. 1) of the Arawaks and Warraus on the Pomeroon and Moruca is called *Ku-yamma* after the tree whence the cylinder (*a*) is obtained, this being a length of bark removed whole after tapping by slipping it from off the subjacent wood. The length of cylinder used is gauged from the ground to the hunter's hips, with a natural internal diameter of from 4 to 6 inches; its upper extremity (*onoroko* = mouth), by means of a curved cut on opposite sides, terminates in two points. Vertically under each pointed extremity, and on a level below the lower limits of the cut, is drilled a hole (*tuku-yoku* = anus), through which are passed the supporting bark-strip (*b*) and a cross-stick (*c*). This flat strip of bark (*titiimi*), of the same material as that used with the cassava baskets when supported from over the forehead, is tied below on the outside of the

cylinder and looped above (Fig. 2) on to a tapering wooden pencil (*d*); the idea of the cross-stick or *tukuyoku-lokodo* (*lit.*, that which is placed in the anus) is to minimise any chance of a fish, when once caught in the cylinder, jumping up, knocking off the weight (to be presently described) and so making its escape. The bait is fixed on to the extremity (Fig. 3, *e*) of a piece of *itiriri* strip (*f*) which is gripped above in the split centre of a wooden pencil or *turabure*¹ (*g*): this bait-strand (*temena* = bait) is always made of this material, and never of twine which would twist, curl up, and stick to the inner side of the cylinder when immersed in the water. The frame-work or *kuyamma-(tu)daia*, (*tudaia* = any stick, switch, etc.), consists of two sticks (Fig. 1, *hh*) split above on their sides to hold the cross-bar (*k*), upon which the cylinder hangs, and tied below by means of a bark strap (*n*) or *tedebe-aidakwanna* (waist-to tie). The cross-bar or *titimi-oburado* (*lit.* that upon which the *titimi* or bark-strip hangs) is invariably wedged into these splits, instead of being laid upon two forked uprights, so as to allow of its maintaining them in any varying position required, whereby the bark-strap below may be rendered taut.

To set the trap, which is employed in the shallow waters of a sluggish side-stream or of the bush savannahs, the frame-work is first of all firmly fixed, the cross-bar wedged in at such a height that the lower extremity of the cylinder, which is about to be suspended from it, is at a distance of a man's foot length from off the muddy etc., bottom. Having passed the bait-strand down the cylinder, the latter can now be hung from the cross-bar by raising the tapering extremity of the wooden pencil over it from behind, and maintaining it in position by means of the *turabure* stick of the bait-strand placed at right angles between it and the two portions of bark-strip. The bait-strand is so arranged that the bait hangs inside at the same distance above the lower edge of the cylinder as the latter does from the bottom. The bark-strap is next tied round the two uprights just taut enough to prevent the cylinder swinging to and fro, but loose enough to allow of its slipping vertically, the necessary degree being obtained by varying the position of the cross-bar in the splits. A piece (*n*) of comparatively heavy wood, the *kuyamma-(tu)kudu* (*tukudo* = any weight), to steady the whole affair is finally placed across the mouth of the cylinder.

Entering the cylinder from below, the fish grabs at the bait, pulls and pulls at it until the *turabure* slips down below the tip of the tapering cross-stick which, now released, allows the cylinder with its added weight to suddenly drop and so enclose and capture it.

The bait used varies according as to whether the trap is set at night or day: in the former case a fish-bait is employed for catching *imiri* or *luku-luku* (snake-fish) and a bird-bait for *imiri* or *huri*; in the latter case a piece of *lukuluku* is almost a certainty for *yurau*.

¹ A general name given to any little piece of wood cut to shape and used on a fishing line.

The spring-trap (Fig. 4) of the Arawaks, Warraus, and, during recent years only, of the Caribs is called *allaussa* (i.e., a spring) after its distinguishing characteristic. It consists of a catch (*ab*) and its support (*c*), a bait-string (*d*), and a spring (*e*). The catch or *tercito* (= wife) consists of a wooden bar (*a*) about 6 inches long, attached at its extremities (*f*) to a piece of twine (*b*) the central portion of which is looped on to the strong support (*c*) or *tercito-(tu)daia* (lit. wife-stick): for a reason which I have not had sufficiently explained, the middle third of the bar is always either painted (black) or has its bark intact. The bait-string or *huri-aring* (after the particular fish for which it is specially employed) is looped above to an upper shorter tapering pencil (*g*) or *beskanto-turabure* (lit. short-stick) and at a few inches distance to a lower longer cross-piece (*h*) or *wadito-turabure* (lit. long-stick): it is attached below to a hook (*k*) or *budehi* (= any piece of bent wood).

After fixing a very long withe—the spring or *allaussa* (*c*)—firmly into the mud, sand, etc., and attaching its extremity to the bait-string, the trap is set by bending the spring well over, drawing the short pencil from behind and under the bar of the catch, and keeping its tapering extremity in position by means of the cross-piece placed at right angles between it and the two portions of twine. An important objective of the spring is to keep the animal when caught above the surface of the water out of reach of certain voracious fish, e.g., pirai, which would otherwise quickly make a meal of it. The hook is so arranged that it hangs at about the length of a man's foot from the bottom. The fish pulling on the bait gradually drags the cross-piece further and further down, until at length, with the release of the short pencil, the hook, bait and fish are together shot up by the rebounding spring and dangle above the surface of the water until the trapper makes his next visit.

This method is used in the river bends at night, with a fish bait, for catching *huri*.

Three varieties of the above spring-trap are to be seen, especially for *haimara* and *huri*. Thus, the Pomeroon Arawaks and Caribs, as well as the lower Moruca Arawkas, substitute a flat F-shaped piece of wood (Plate XIII, Fig. 1) or *hoka*¹ for the triangular catch, and bait with meat by day as well as by night (Fig. 2). Again, the Pomeroon Arawaks will often do away with both triangle and F-piece, locking the spring by means of the shorter pencil attached now to the strong immovable support (Fig. 3). The most delicate arrangement of all, however, is where the bait-string is attached direct to the extremity of the spring, the longer pencil remaining independent of it (Fig. 4). The hunter has to exercise great care when setting this trap, lest the spring should unexpectedly slip and catch the hook in his fingers.

The cage-trap (Plate XIV, Figs. 1–5), very much after the style and use of the basket employed in England for catching eels, is known to the Arawaks as *máswa*

¹ Query, *anglice*, "hook."—W. E. R.

and to the Warraus as *bar*. At first I had reason to believe that, like its present Arawak name, the article was of African introduction¹; but on comparing its construction with that manufactured by the negroes, and for other reasons which need not be detailed here, I am satisfied that it is indigenous.² The biggest cage met with in this district is about $3\frac{1}{2}$ feet long, and wide in proportion; the smallest that I have come across is a little over 2 feet. It is made from split *mamuri*, and consists (Figs. 1–4) of a more or less cylindrical body (*a*) and a cone-shaped head (*b*) made separately, but finally joined by inserting the latter into the former and “sewing” them in position. The manufacture of the body starts with the tail end (*c*) by means (Fig. 2) of a ring (*d*) on to which the warps are fixed. Each warp (*e*), at least twice the length of cylinder to be made, is doubled on itself at its middle, where it is attached to the tail-ring by looping over and tying, or by tying direct (Fig. 3). The main weft (Fig. 2, *f*) is now introduced and made to pass, in the course of its spiral progress, alternately over and under every half warp; it is kept in position by means of a thinner strip (*g*) woven alternately in front and behind it. Each half-warp throughout its whole length remains either under or over the main weft-strand. Should the warp interspaces become too open, a new one can be easily inserted (*h*). The body is finished off either on the main weft itself or else elaborated with a lip projecting outwards, similar to that sometimes met with on the head.

The construction of the head (Fig. 1) is similar, but commencing with a comparatively larger ring for the mouth (*i*), and weaving the texture more closely so as to obtain the cone-shaped neck (*k*). Furthermore, the projecting strands are left free so as to interlace more or less, and thus constitute a throat (*l*) through which the fish can easily wriggle themselves in to get at the bait beyond, but once in cannot get out again. Many fish cages are to be seen (Fig. 4) where the head is constructed with a lip (*m*) projecting inwards and outwards so as to form an inner (*o*) and outer (*n*) margin to the mouth. Such construction (Fig. 5) commences with the inner margin (*o*), after the manner described (in making the body), until the edge of the mouth is reached, when the weft (*f, g*) is turned back on itself (*p*), to take up in turn every pair of half-warps throughout an entire circuit (*p, q*) of the article. These pairs are not, however, taken up direct, but only after having been woven over a large mouth-ring (*r*) and passed respectively over and under the two immediately succeeding pairs. On completion of the circuit, the weft passes alternately under and over every half-warp in the usual spiral manner, with the result that the enclosing head comes to be first of all constructed, then the conical neck, and finally the throat.

The landing-net, used by Arawaks (*shi-pi*), Akkawai-os (*mapipu*), and Caribs, is a cone-shaped basket (Fig. 6), the mouth of which is attached to the prongs of a forked stick (*h*) spliced around it. The basket is about 1 foot deep, and the

¹ Stedman, *Narrative of a Five Years' Expedition, etc.*, London, 1796, vol. ii, p. 288.

² Im Thurn, *op. cit.*, p. 238, speaks of it as being used by the Arecunas.

handle is from 3 to 6 feet long. It is used for picking up the fish as they come to the surface of the water after being "poisoned." The construction of the basket is peculiar. Starting with six warps (Fig. 7, *wa*) plaited into a hexagon (*c*), a weft (*we*) is inserted, but its extremities, so soon as they cross one another (*k*), become additional warps (*wca*). Weft after weft is thus added, the utilisation of their extremities as warps causing the basket to have a longer slope on the lower surface than on the upper. The completed pattern (Fig. 8) is one of hexagons.

By means of a comparatively simple apparatus (Plate XV, Fig. 1) a bow and arrow may be set for striking tapir, deer, or *labba* (*Cælogenys*), the arrangement as a whole being known to the Arawaks as *shimara-abbadagotah* (i.e., arrow-trap). Two strong uprights (*a*, *a*) are driven firmly into the ground, and joined by a horizontal cross-bar (*c*), the height at which this bar is fixed depending upon the particular animal to be shot, a height of one hand-width for *labba*, three for deer, and eight for tapir, a hand-width being reckoned as the distance between the tip of the extended thumb and the inner edge of the closed palm (Fig. 2). A third strong upright (Fig. 1, *b*) is driven into the ground between them right behind. Between the anterior pair, and resting upon the cross-bar, are two smooth rods (*d*, *d*) each supported horizontally on a small forked stick (*e*). The central portion of the bow (*f*) is next strongly tied on to these two uprights immediately above the cross-bar and the rod-ends. The catch-string (*g*), against which the animal strikes, is now attached at one extremity to a post, tree, etc. (*h*) on the immediately further side of the track, and, passing under the cross-bar, is fixed at the other to a carefully trimmed wooden pencil (*k*) lying across the rods. This pencil, after the catch-string has been stretched sufficiently taut, is held in position by the pressure upon it of a smaller pencil (*l*) tied on to the posterior upright, and passed from below upwards and over the drawn bowstring. The arrow (*m*) is finally adjusted in place, only to be freed on the disturbance of the catch-string, whereby the longer pencil is tilted forwards, and with this the smaller pencil and bow-string released.

A gun, fixed on different lines, is sometimes substituted for the bow.¹

For catching birds, a spring trap (Plate XV, Fig. 3) is made of a running noose (*a*) attached to a tapering pencil (*b*) and thence on to the end of the spring (*c*). Having fixed a thin half-hoop of withe (*d*) firmly into the ground, the pencil is arranged in such a manner that so long as the spring remains taut, it will support a bar (*e*) placed across the legs of the hoop. Upon this cross-bar and at a gentle slope are made to rest some three or four perches (*f*) over which the noose is spread. The weight of the bird on either of the perches is sufficient to press down the bar, with the result that, the pencil being freed, the noose is suddenly dragged upon and tightened wherein either a head, leg or wing is caught. I have seen this trap used by the Pomeroon Arawaks.

¹ Dance, in his *Chapters from a Guianese Log-Book*, p. 14, speaks of a trap-gun used for water-haas (*Hydrochaerus*) on the Berbice R., with several long cords attached, so as to strike the animal walking in the immediate vicinity, no matter the direction along which it is moving.

The fall-trap (Fig. 4), perhaps of foreign introduction, is made of a centrally-raised cover, the constituents of which are tied together, very much after the style of roof seen in a temporary *binab* (a thatched shelter). Raised on one side (Fig. 5), the centre is made to rest upon a vertical pencil, formed of an upper (*a*) and lower (*b*) mortice, delicately balanced. From the lower mortice to the opposite side of the cover is stretched a string, the slightest disturbance of which will break the balance of the pencil, and so admit of the trap to fall. A very common method for catching pigeons.

Amongst the Warraus on the Moruea, the youngsters will use the following device (Plate XVI, Fig. 1) for catching small birds during the nesting season. It consists of a light cane ring (*a*) about 7 inches in diameter to which are attached two arched pieces (*b*, *c*) crossed at right angles. A large number of slip-nooses (*n*), all formed of Krowa twine, are next tied around the limbs of the arches, so as to control, as it were, the entire intermediate areas.¹ The construction of the slip-nooses is very simple; their ends are attached by clove-hitch (Fig. 2). The frame is then tied on to the tree-branch over the nest with but little chance of escape for the bird when flying home.

The rat-trap (Plate XVI, Fig. 3) of the Arawaks and of the Warraus, who use a species of this animal for food, consists of a noose (*n*), spring (*s*), bar (*b*), hook (*h*), and enclosure (*e*). The noose is made of an *itiriti* strip about 4 feet long, twisted upon itself, and then allowed to double over, so as to form a two-strand locked by its own torsion: its free ends are knotted together (*k*). Twine, etc., cannot be substituted for the *itiriti*, the latter being the only material to hand which will not "stick" should rain or moisture falls. The bar, from 12 to 16 inches long, is strong, yet pliable, and after being stuck firmly into the ground, has its exposed portion bent over at right angles, a position maintained by means of the forked stick or hook clamped over its extremity: it is thus made to lie horizontally with, and about $\frac{1}{2}$ an inch from, the surface of the soil. Looped on to this bar is one end of the noose, which is successively looped through itself, fastened by a clove-hitch on to the extremity of the spring, and passed back again from outside under the bar, where it is fixed in place by means of a cylindrically-cut piece of cassava jambed tightly up against the knot into the interspace between the bar and the surface of the ground. Except immediately in front of the noose, the whole is surrounded with a miniature fence or enclosure formed of a broad *itiriti* or other leaf, set up edgewise between a varying number of light wooden slips.² As a result of this arrangement to get at the cassava, the rat has to pass through the noose in which, as soon as he starts digging up and removing the cassava, and so frees the knot, he gets hoisted and caught.

¹ For clearness sake, only one intermediate space is shown "covered" in the illustration.

² For diagrammatic purposes a portion of this enclosure is represented as transparent in the illustration.

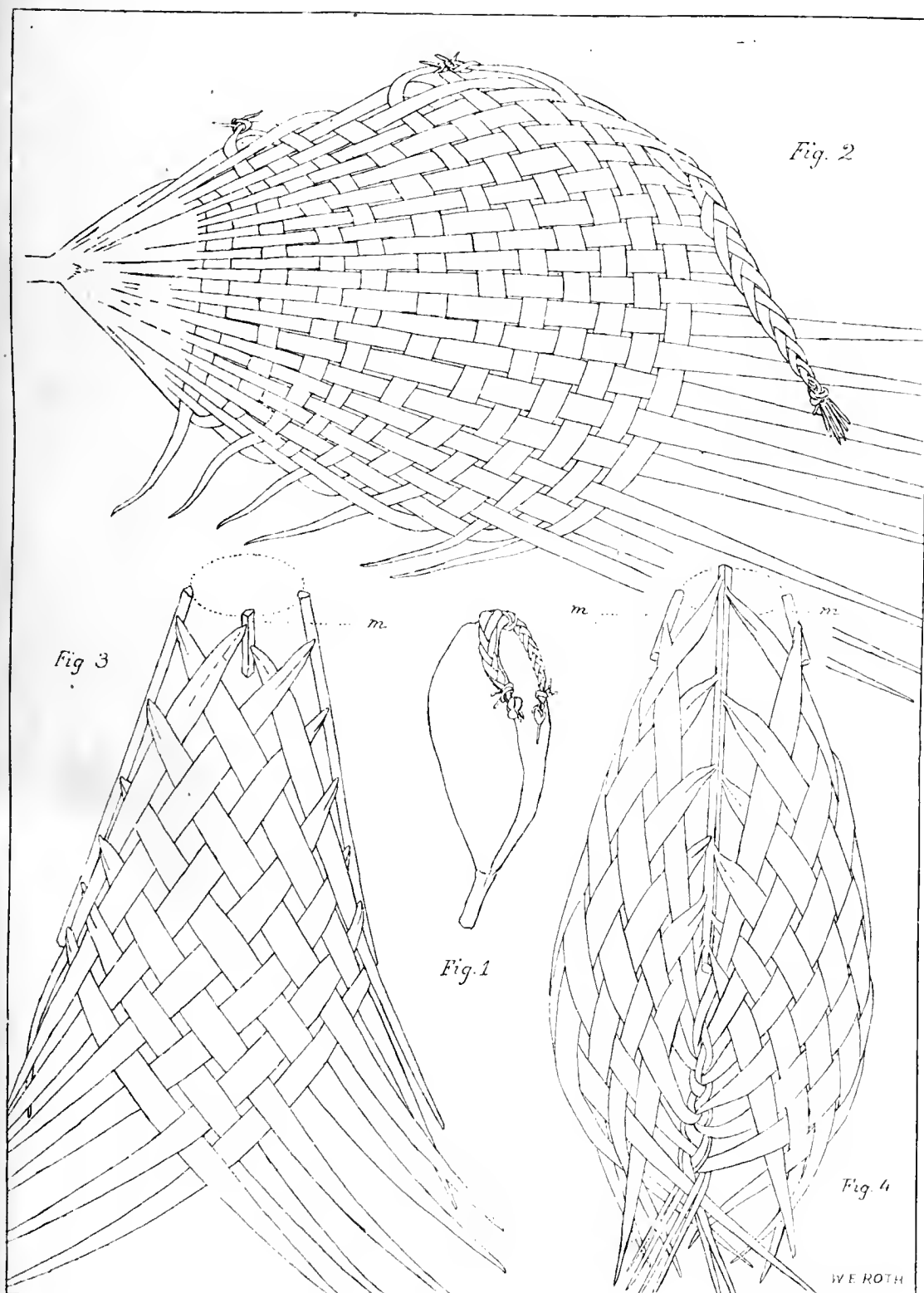
REMAINING FANS.

The Arawak fan has already been dealt with in Part I¹: the varieties met with amongst the other tribes have now to be described.

The Warrau and Carib fan (Plate XVIII) which is identical, is of a rectangular shape, the width exceeding the height, of a pattern composed of concentric rectangles, with or without a central grille, and made of split *itiriti*. Except for market purposes, *i.e.*, for sale or barter to outsiders, the ratio of width to height is constant, and the strands are not dyed. It is built upon the usual diamond foundation (Fig. 1, *a*) with gables (*d*), wings (*w*), and a sub-structure (*c*), terms for which the explanations have already been given. The foundation (Fig. 2) is formed of a varying number of horizontal rows, in herring-bone fashion, according to the size required, the upper angle of the diamond limiting the upper edge of the finished article: the two lowermost strands (*e, f*) play an important part, as will subsequently be shown, in the stability of the fan. The next process is the manufacture of the gables (Fig. 3), a start being made at the upper angle of the foundation and "breaking" one strand after another, each being started on its journey by passing under two: this goes on until the lowermost strands of the diamond (*e, f*) are reached, the latter being left free and projecting. The wings are now formed by similar procedure (Fig. 4), the second wing in the course of manufacture completing the triangular sub-structure (*c*): the base-level to which the wings are built depends upon the caprice of the maker. The two projecting strands, which might almost be regarded as diagonals, are next bent back on to and along themselves in and between the strands through which they have already passed: they thus serve to tighten up the plaits and act as stays. Indeed, it is with the same object that the last strand (*k*) to be "broken" at the lower corner of the edge of the wing is dealt with in similar fashion. There are two methods adopted in "finishing off," *i.e.*, in preventing the fraying of the lower edge. The first and easier (Fig. 5) is to take up on each side one strand at a time, and then, after "breaking," to pass it under its two immediate neighbours and cut it: these cut ends are next covered with the two halves of a split wooden pencil which are laid along the lower edges of each side and tightly sewn on to it in three places with waxed Krowa fibre. The second method (Fig. 6) is to insert one extremity of a long strip of mamuri (*m*) into the lower portion of the body of the fan and, as it emerges below, to coil it over and around a bundle of some three or four strands in front and behind: this process of overcasting is continued right around the lower edge on both sides of the article, by taking up a new strand with every turn of the coil, and cutting off the extreme ends of the projecting strands when the bundle composing them appears to be getting too thick and unwieldy. These variations are photographed in Plate XVII, Figs. 1 and 2 respectively. Fig. 3 is also a Carib fan, made for trade purposes, but its identity of pattern is hidden by the staining of some of the strands.

¹ See *J.R.A.I.*, vol. xxxix, p. 26.

The Akkawai-o fan (Plate XIX) is of a square shape designed, so far as the Pomeroon District is concerned, of a uniform pattern of a series of concentric squares, but manufactured on a different principle to all the others, in that a commencement is made at the left lower corner whence the article is gradually built up, strand by strand. The material used is the same split *itiriti*, not dyed. The edges of the fan may be described as upper, lower, left, and right. Starting with a centre strand (Fig. 1, *a*), which will ultimately constitute one of the diagonals of the square, this is laid on the flat, and two others (*b*, *c*), "broken" at their middle, are placed behind it, one of them a strand's breadth in front of the other. A third (*d*) is now added (Fig. 2) at right angles to the diagonal, and then (Fig. 3) a fourth (*e*) over which the third is "broken." A fifth and a sixth is next put in and so on, as is required for the pattern (Fig. 4), the preceding strand being always broken over the last one inserted. The process is thus repeated over and over again (Fig. 5) according to the size of article to be manufactured, until the second diagonal (*K*) is put in place, this strand, like the first diagonal, being left free at the ends. The three or four immediately preceding strands (*l*, *m*, *n*, *o*), which have already been broken along the lower and the left edges, are now again similarly treated to form the upper and right edges on passing beyond the second diagonal. A peculiarity in the arrangement of these three or four strands is that their extremities are plaited in and between identical projecting strands, so as to lie in close opposition one behind the other: the object of this is to tighten up and fix the portion already manufactured, and hence to act as a stay. Furthermore, by looking out for this thickened portion of the fan, one can always tell at which corner the plaiting has been commenced. Beyond these three or four strands, thus doubled and tucked in upon themselves, yet another variation in the plaiting is adopted (Fig. 6) which may be described as follows:—Each strand is cut short alternately and successively at a spot limited by the right (*r*, *x*) and upper (*r*, *t*) edge of the fan respectively: the longer extremity (*R*, *T*, *V*, *X*) is then broken over its shorter-cut end, whence, passing along and covering it, according to the design of the pattern, it is pushed under a set of three strands and cut close (*w*, *y*, *z*). The projecting ends of the two diagonals are finally tucked back on to and along themselves, and thus act as stays like the three or four central ones mentioned above. A completed Akkawai-o fan is shown in Plate XVII, Fig. 4.



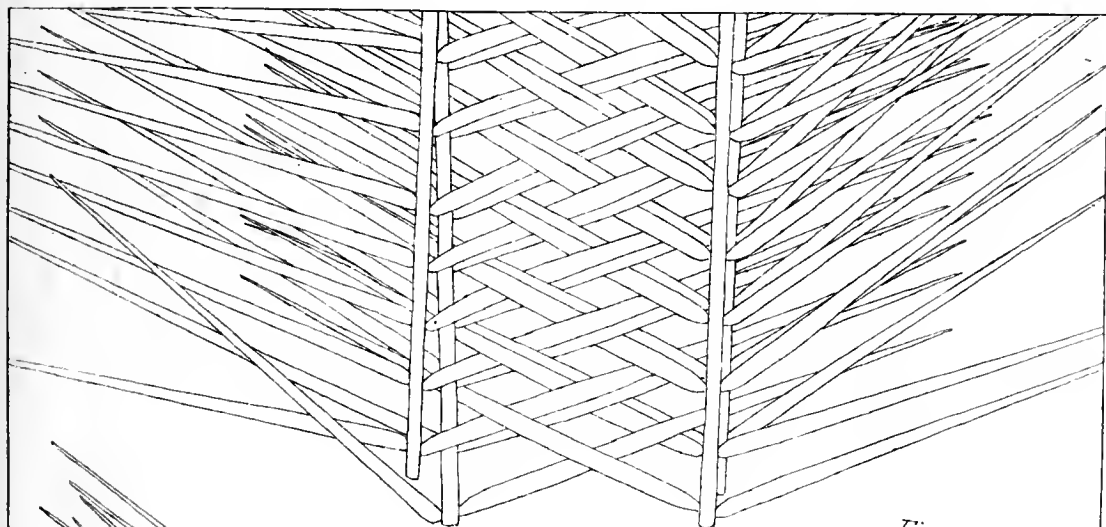


Fig. 1

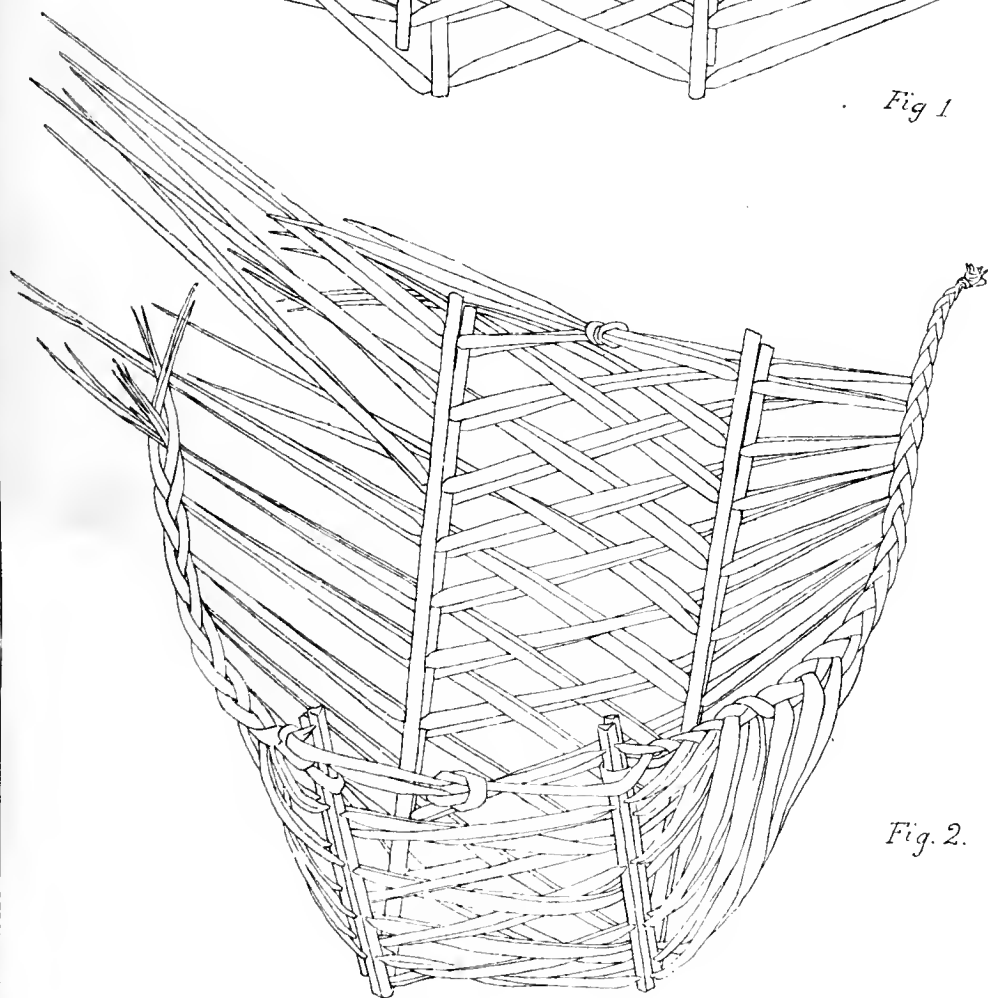


Fig. 2.

W.E. ROTH.

Fig. 1

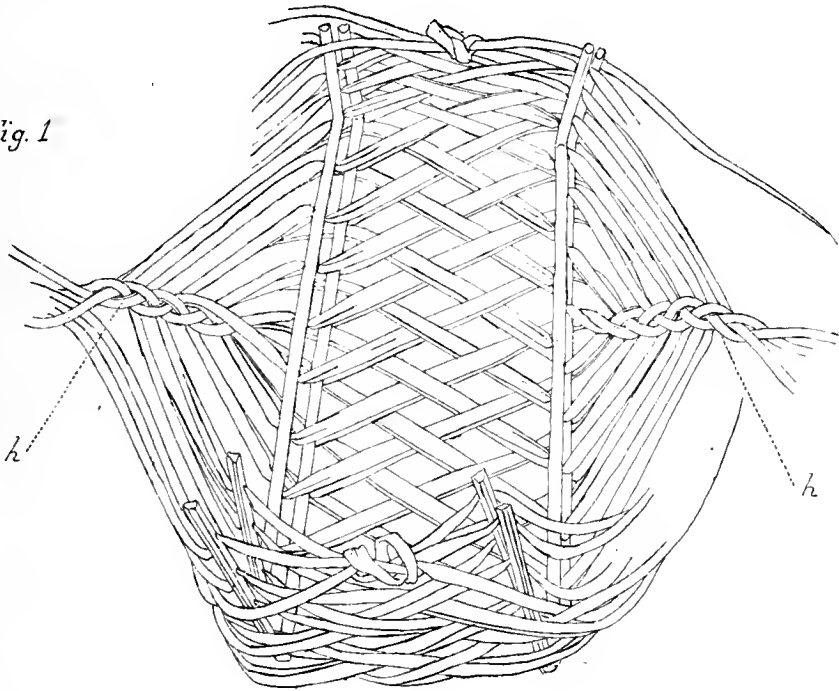


Fig. 3

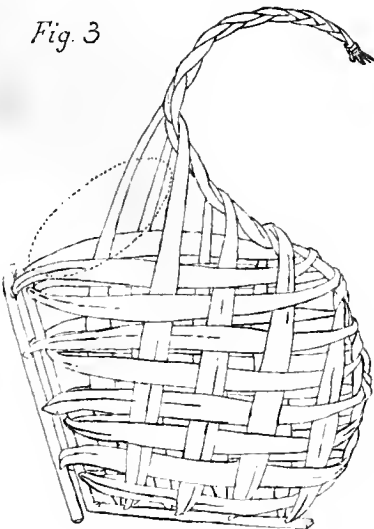
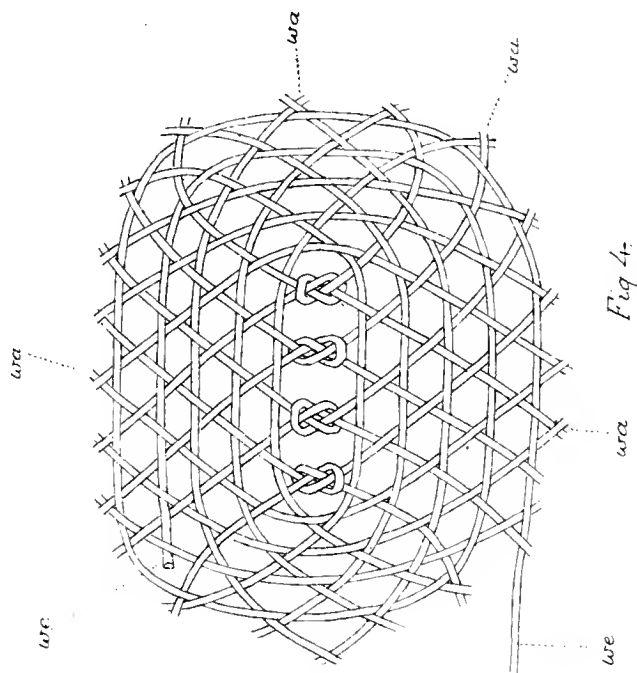
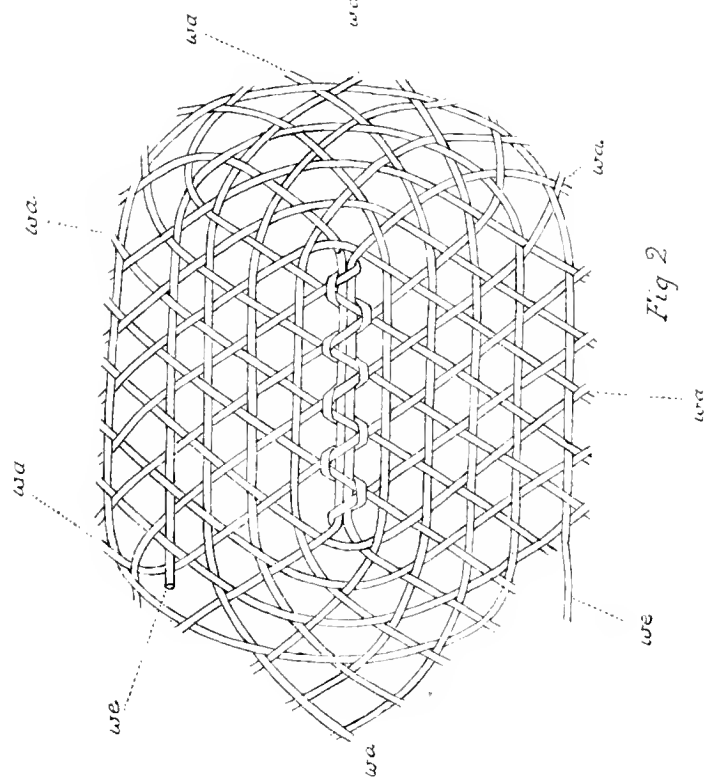
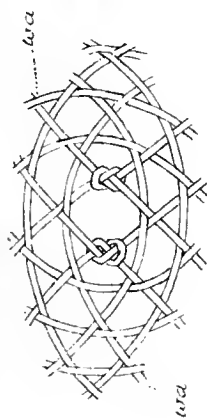
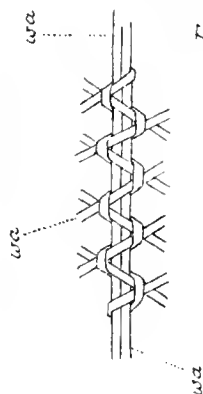
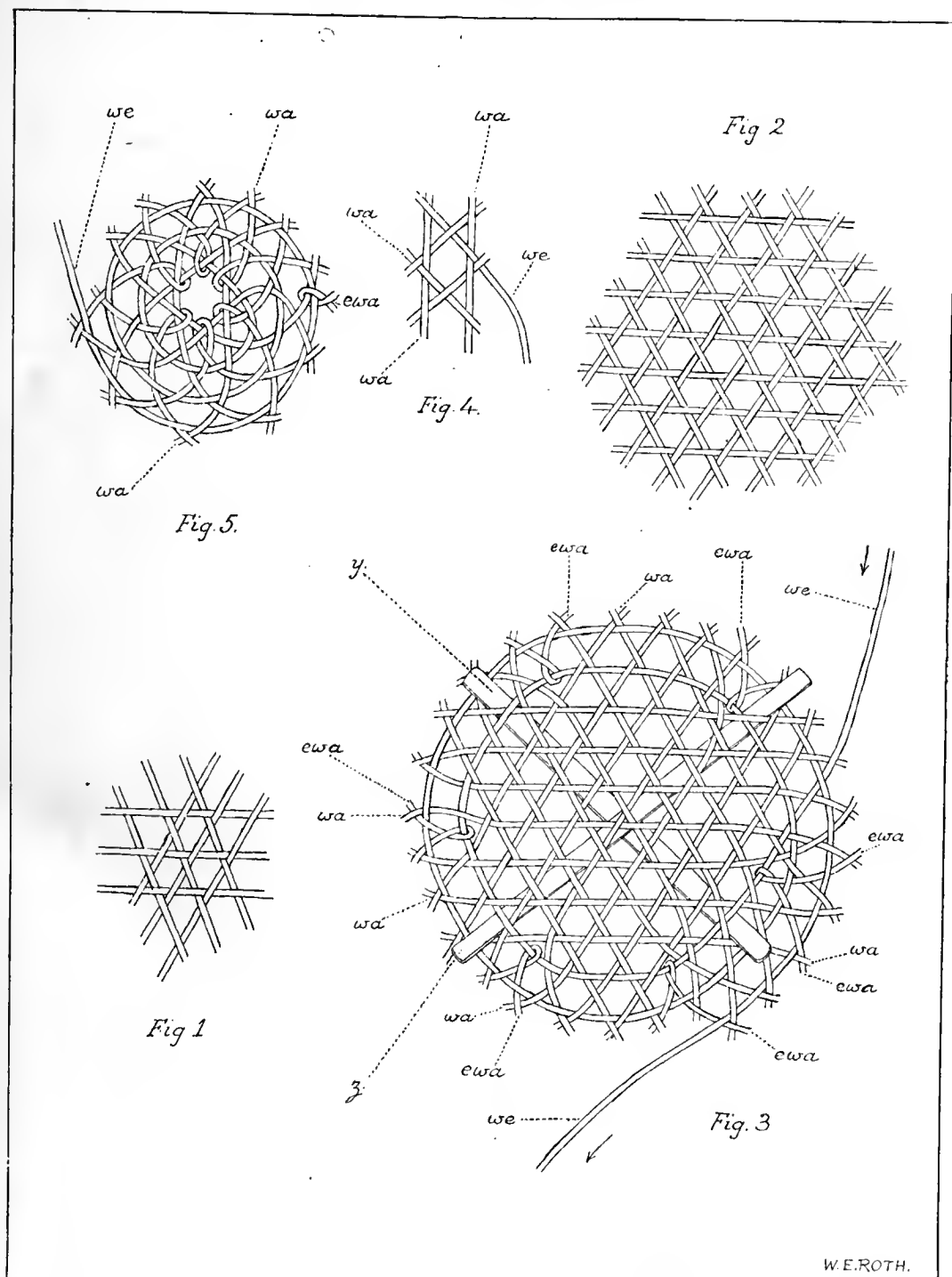


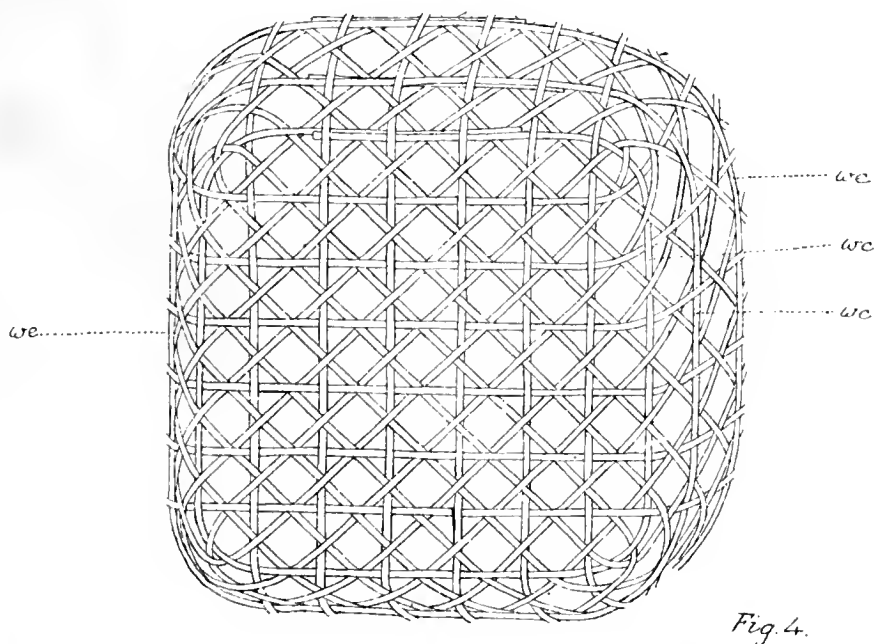
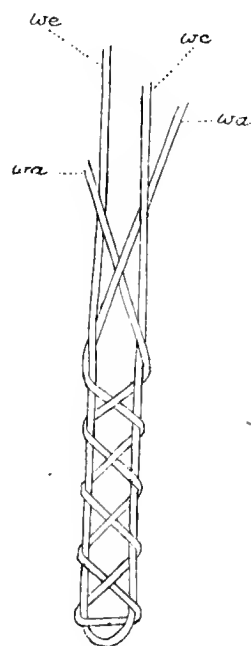
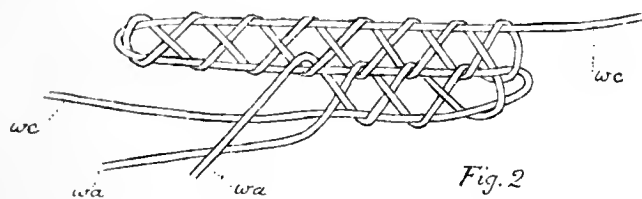
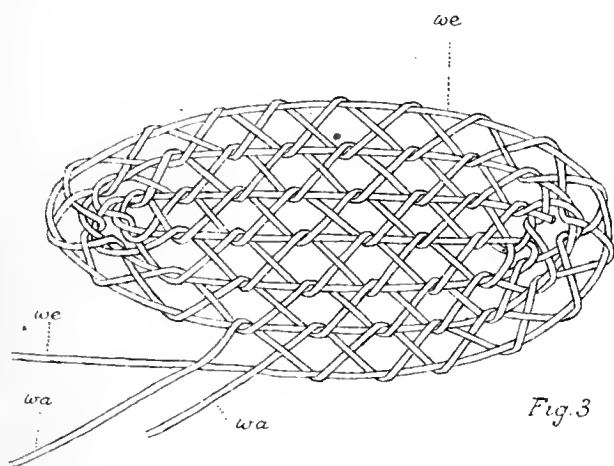
Fig. 2

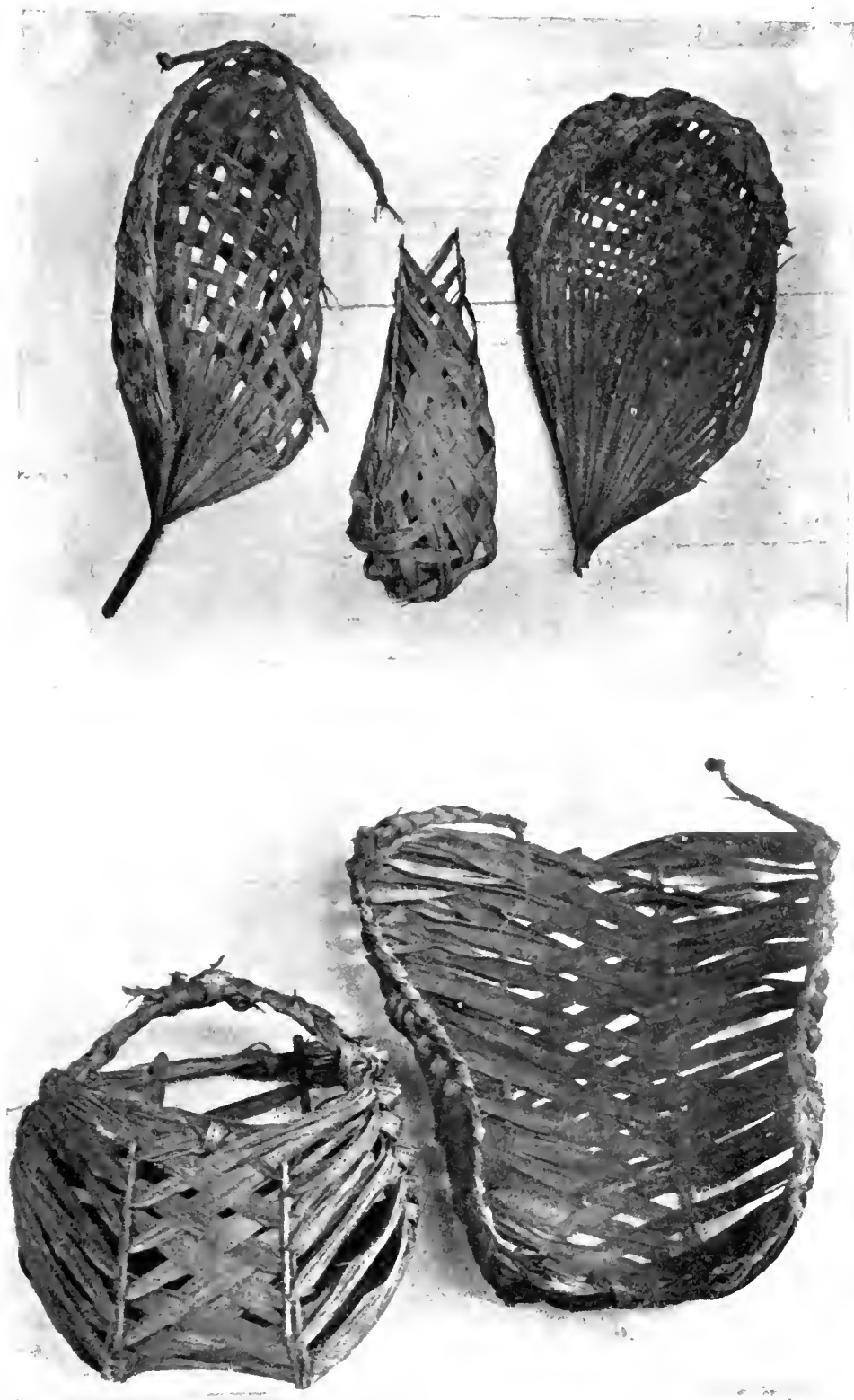


W. E. ROTH.

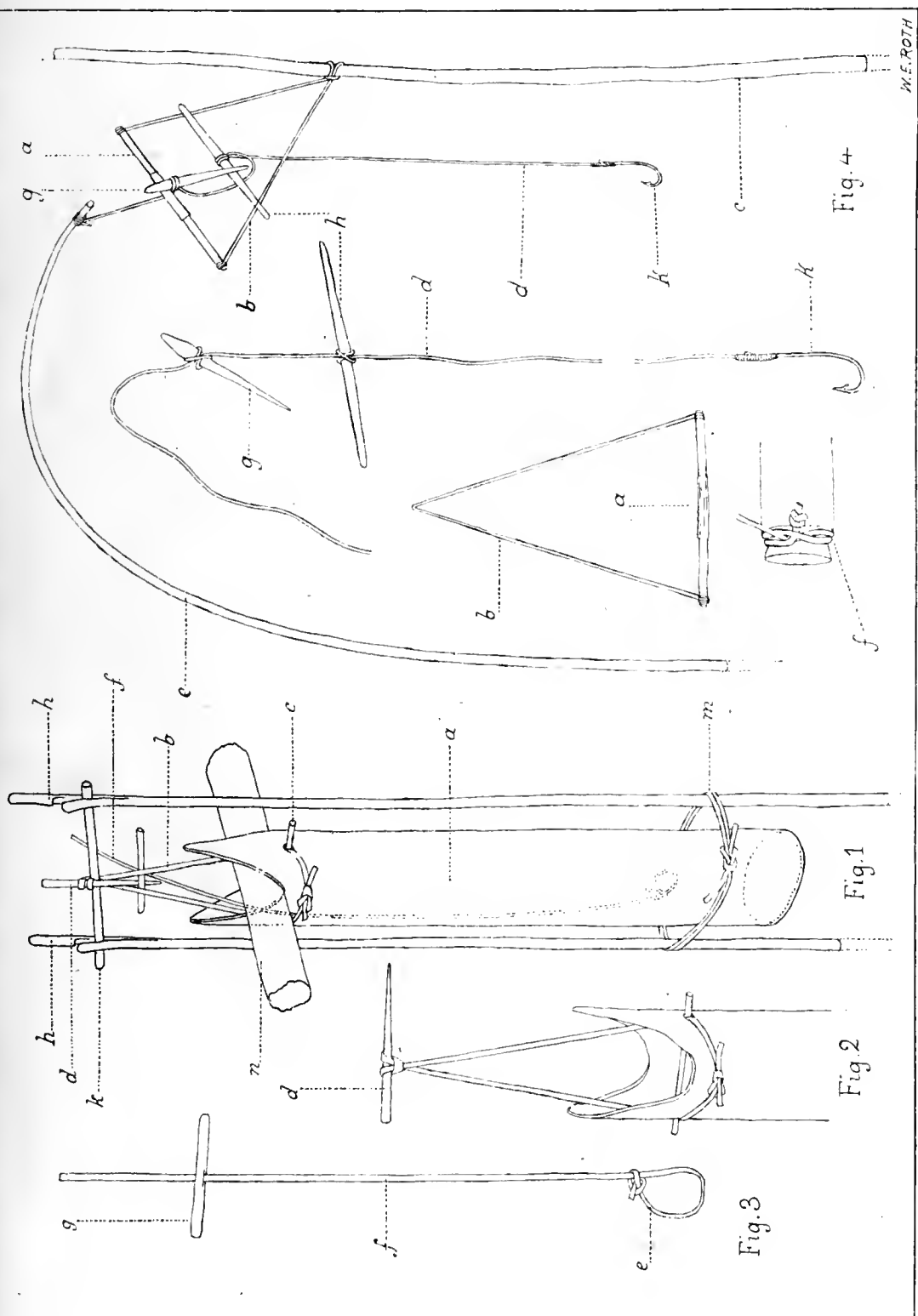






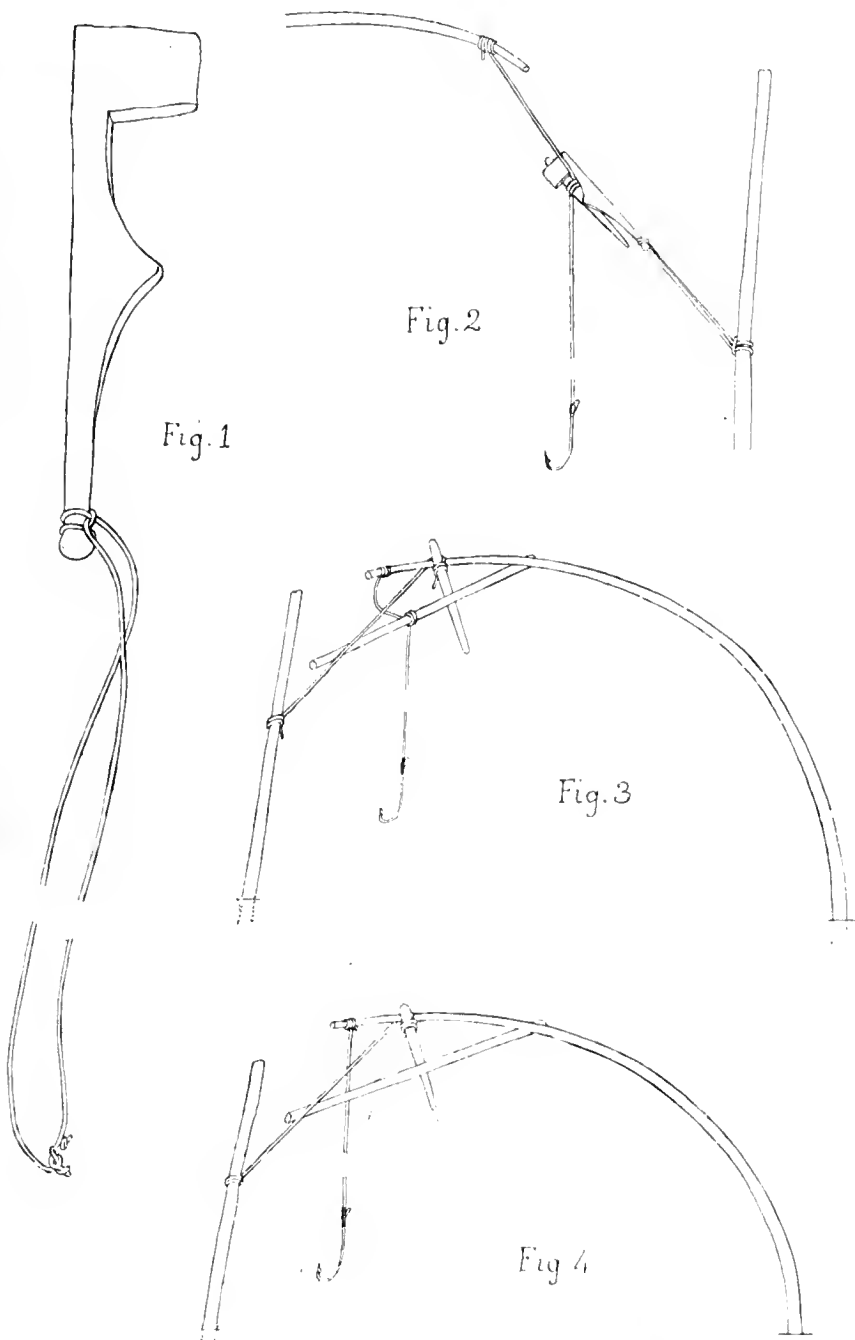


TECHNOLOGY OF THE POMEROON DISTRICT.



W.E. ROTH

REPRODUCTION OF THE ORIGINAL DRAWING



W.E. POTII

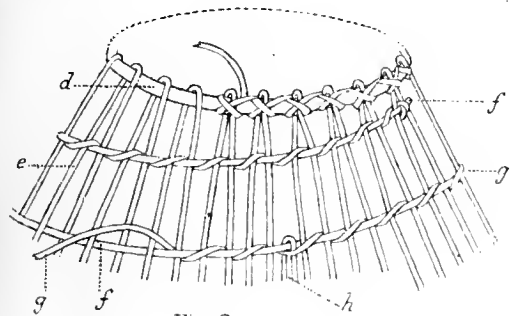


Fig. 2

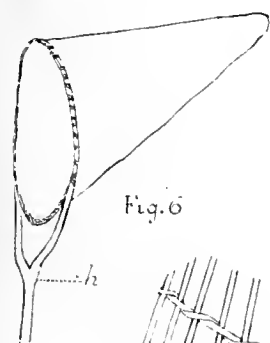


Fig. 6

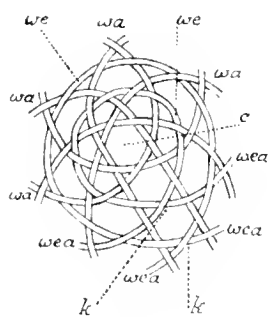


Fig. 7

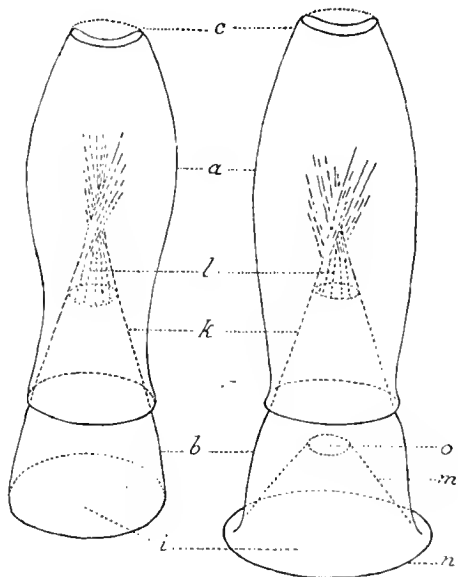


Fig. 1

Fig. 4

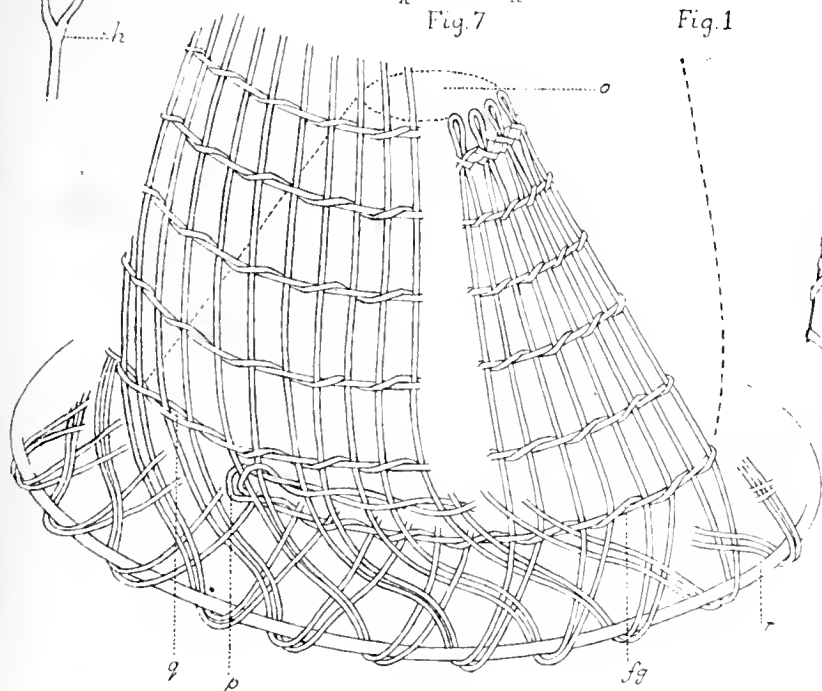


Fig. 5

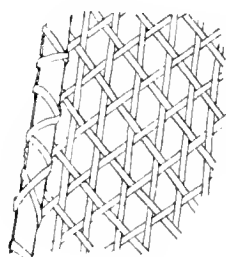


Fig. 8

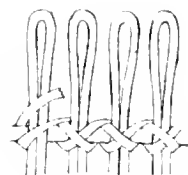


Fig. 3

W E ROTH



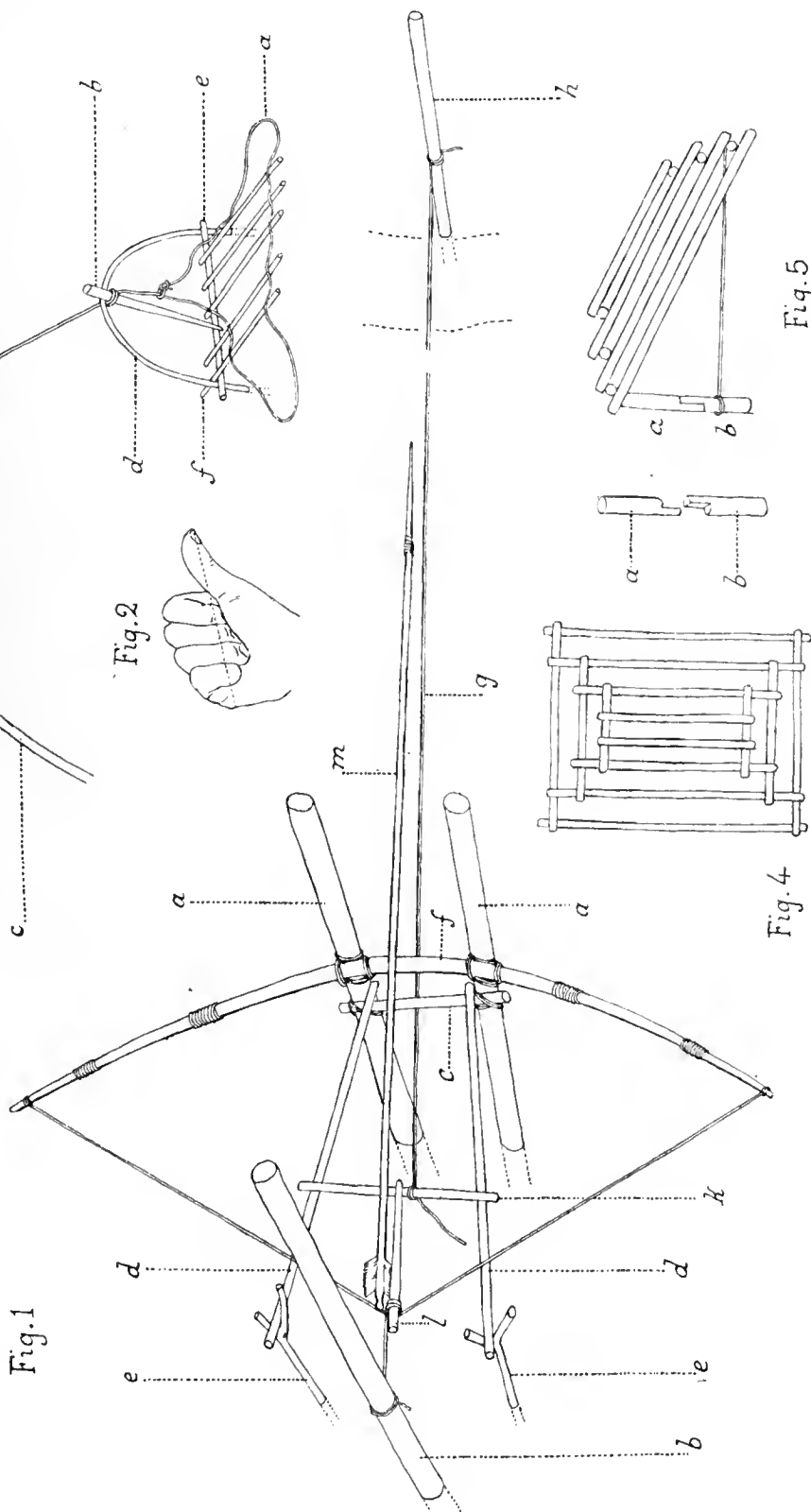




Fig. 3

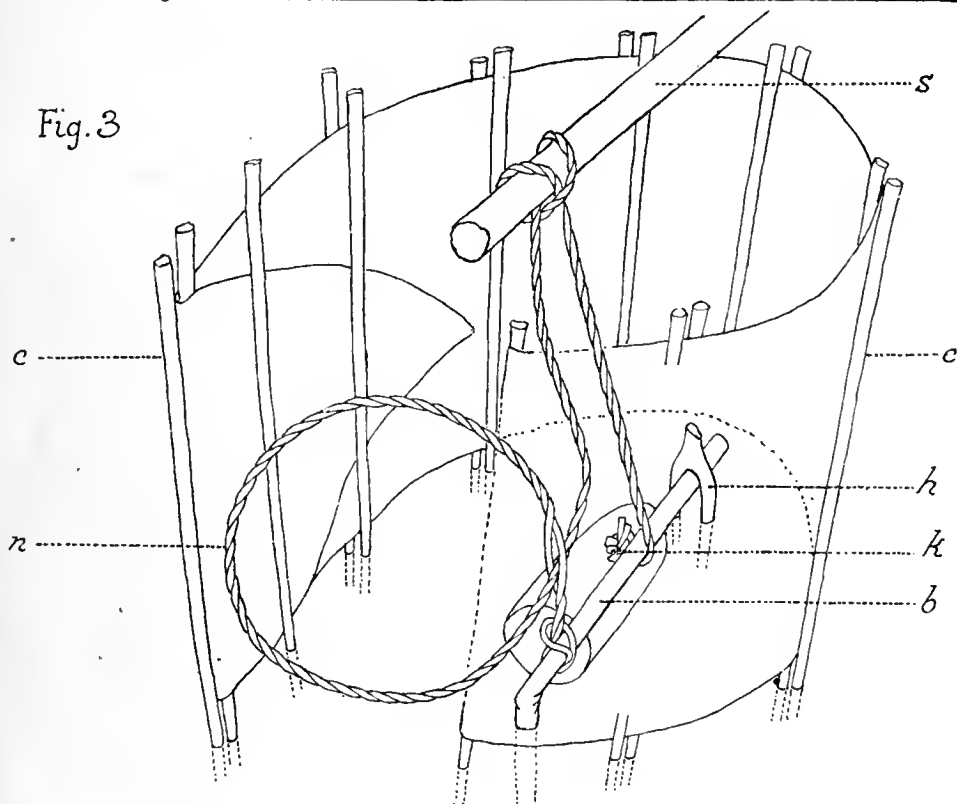


Fig. 2

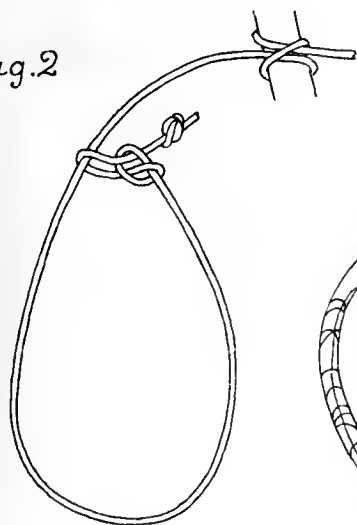
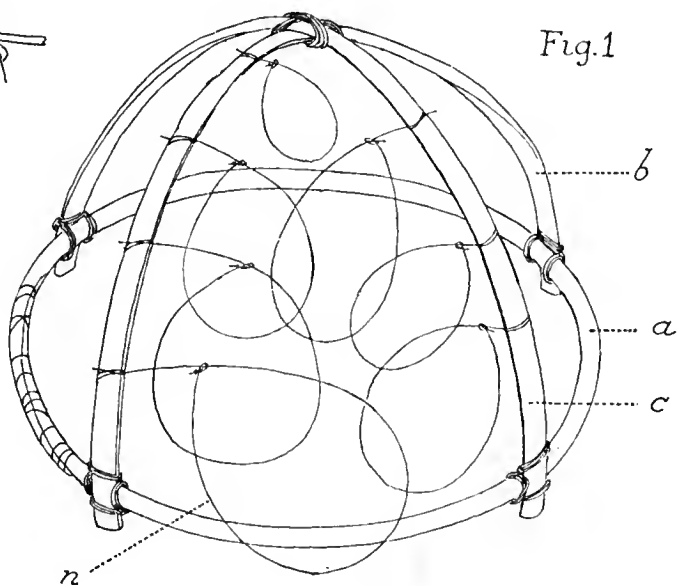
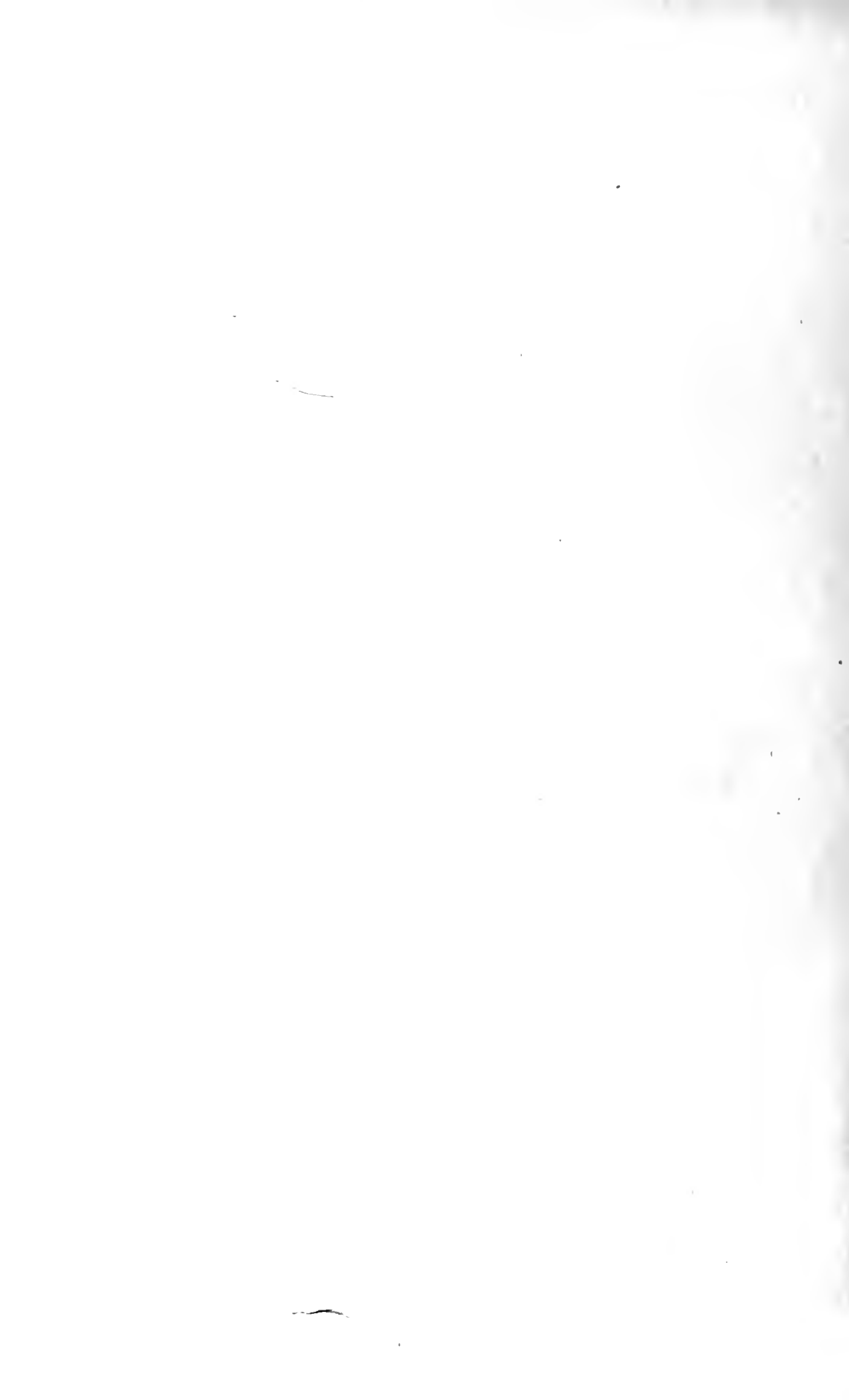


Fig. 1



W.E. ROTH



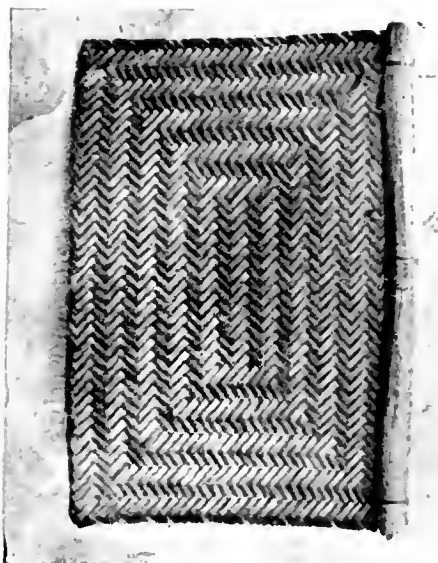


FIG. 1



FIG. 3.

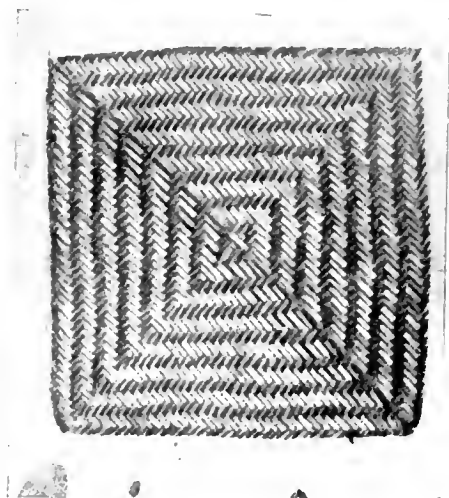


FIG. 4.

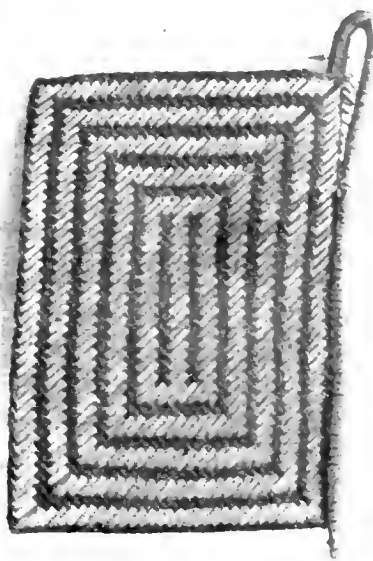
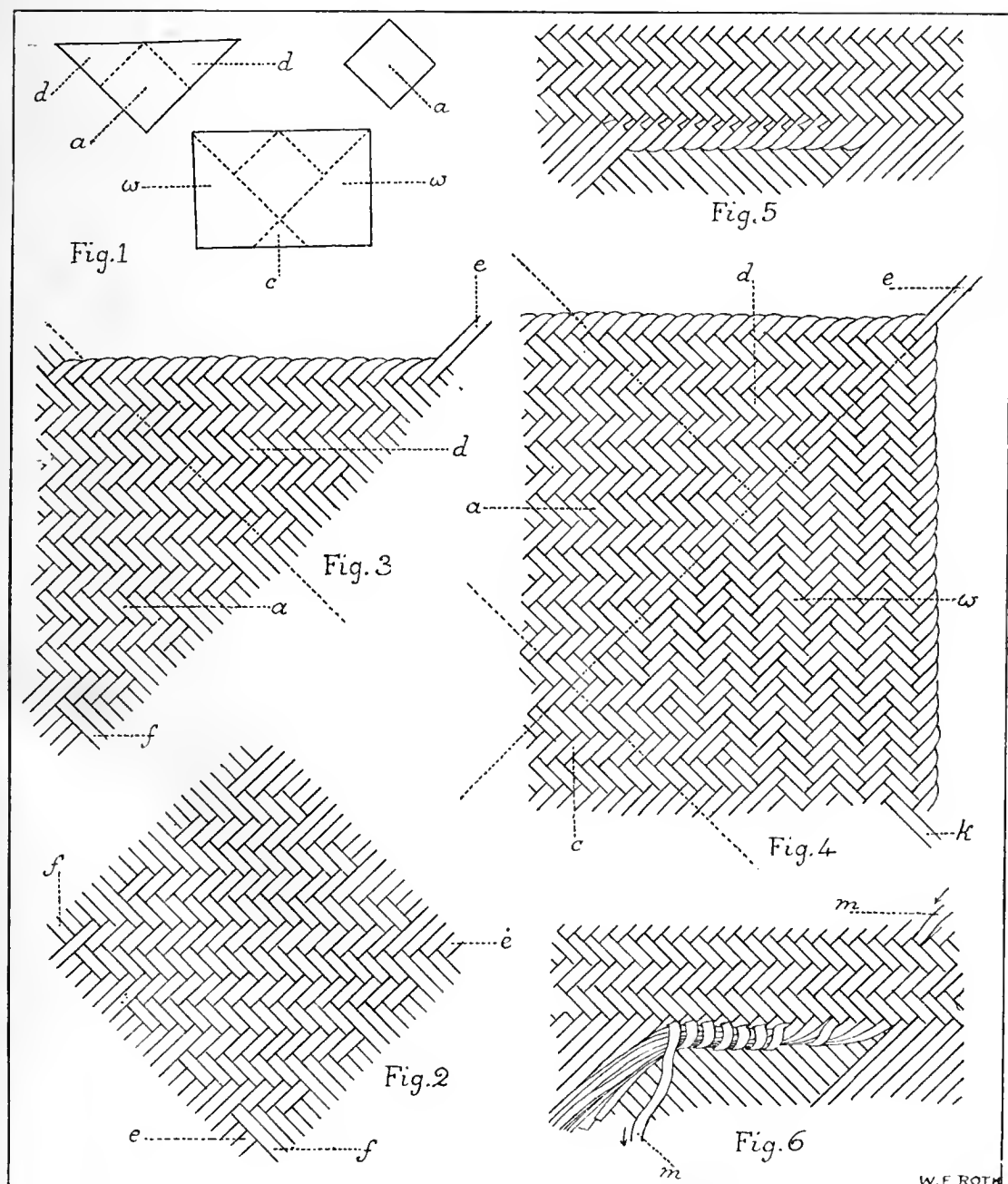
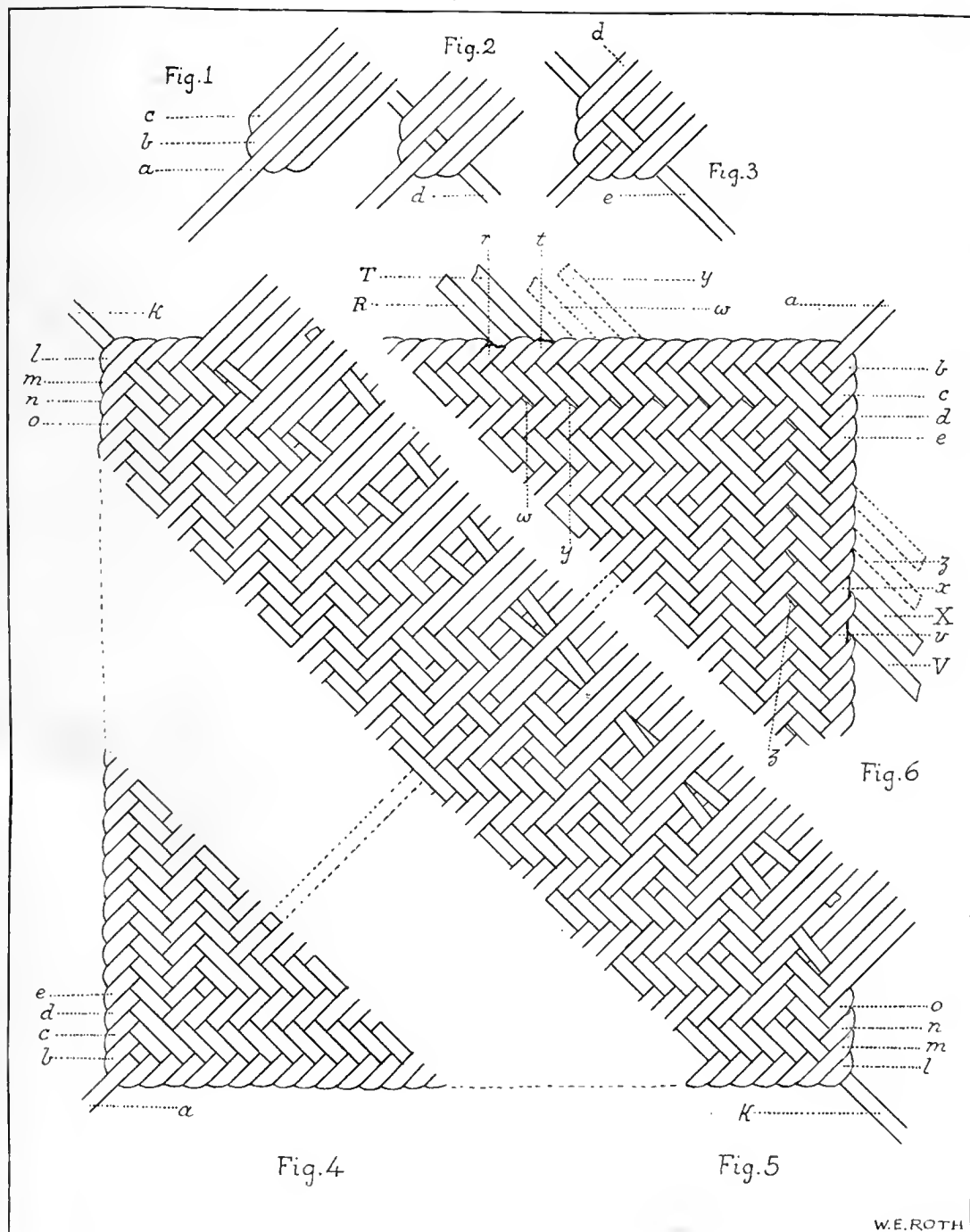


FIG. 2.



W. E. ROTH







CUP- AND RING-MARKINGS: THEIR ORIGIN AND SIGNIFICANCE.

BY H. J. DUKINFELD ASTLEY, M.A., LLT.D., ETC.

[Read before the British Association (Section H), Dublin, 1908, and revised 1910.]

FOR a great many years now the prevalence of what are known as "Cup- and Ring-Markings" on rocks, stones, and objects of domestic use, whether as amulets or ornaments, or rather of both combined, for among primitive races the ornament is an amulet, has been a subject of common knowledge to archaeologists and anthropologists. The former were the first to notice and describe them; it is only within the last few years that the labours of the latter, on the assumption that primitive man is everywhere and always the same at similar stages of culture, have caused light to be thrown on their probable origin and significance.

Forty years ago Sir James Simpson first called the attention of the archaeological world to the subject in his book entitled, *Archaic Sculpturings of Cups, Circles, etc., on Rocks*, published in 1867.¹ There he described all those that were then known in Scotland, Northumberland, and Yorkshire, and in a series of beautiful plates he illustrated every variety of form which they exhibit. In all instances there is the central cup or depression surrounded by one or more concentric circles or rings. But these rings take varying forms. Sometimes they are complete; sometimes only semi-circles; sometimes they take the form of spirals. Again at times one or more sets of cup- and ring-markings are united by lines or ducts making a variety of figures; and again at times the outermost circle has a series of rings issuing from it, and converging towards the central depression or cup. Along with the cup- and ring-markings Sir James Simpson also noticed representations of the soles of human feet, and curiously enough similar representations are found on the rock-drawings of the Arunta in Australia. After mentioning, only to reject, the Swedish archaeologist Nillson's conjecture that these markings were Phœnician in their origin, the learned Scotch writer came to the conclusion that they are "archæological enigmas," but he went on to make the luminous suggestion that they were "probably ornamental and possibly religious," adding that "though in the first instance

¹ It may be noted here that in the year 1859 the learned Sir J. Gardner Wilkinson, F.R.S., read an elaborate paper before the British Archæological Association, which was published in the *Journal* of the Association in the following year, entitled "On the Rock-basins of Dartmoor, and some British remains in England."

In the course of this paper he refers to cup- and ring-markings on the rocks in Northumberland, and claims to have been the first discoverer of such markings as far back as 1835, in which case the honour due to a discoverer must be accorded him.

probably decorative, they were also emblems or symbols, connected in some way with the religious thoughts or doctrines of those who carved them."¹ In this he was only anticipating the modern anthropological conclusion that "the savage is extremely practical. His arts, music, and drawing" (and sculpture, and we may add his ornaments) "exist not *pour l'art*, but for a definite purpose—a method of getting something that the artist wants."

What this "way" was, and that it was connected with the magic, sympathetic and otherwise, which was the inseparable concomitant of early religious ideas, and with the establishment of society on a totemistic basis, we shall endeavour to prove from the analogy of existing primitive races in the course of this study.

Before proceeding further, however, we will state first the localities where archaic cup- and ring-markings have been proved to exist, both in Sir James Simpson's day and since; we will then refer to certain theories as to their significance put forward by writers subsequent to that great authority; and finally on the basis of present-day usage among primitive peoples we will propose what may be considered the solution of the problem of their origin and significance in the light of present-day knowledge.

The first, as we have seen, to call attention to these curious rock-markings was Sir James Simpson in Scotland, and he enumerated all the localities in which they were then known to occur, which all came under the designation of "archaic."

It is unnecessary to recapitulate the list given by him, which may be found by any student in his book. They comprise localities situated in almost all parts of Scotland, besides Northumberland, Cumberland, and Yorkshire. Archaic cup- and ring-markings are now known to occur in all parts of our own country, not only on scarps of rock, but on the stones of Druid circles, from Inverness-shire to Lancashire, Cumberland, and the Isle of Man. They also occur on great stones arranged in avenues; on cromlechs; on the stones of chambered *tumuli* in Yorkshire; on stone "kists" or coffins in Scotland, Ireland, and in Dorset; on prehistoric obelisks or solitary "standing-stones" in Argyll; on walls in underground Piets' houses in the Orkneys and Forfarshire; in prehistoric Scottish forts; near old camps, as well as on isolated rocks, scarps, and stones. They are found in the Cheviot Hills, on the moor near Chatton Park, in Northumberland; there, engraved on the boulders, may be seen central cup-like depressions, surrounded by incised concentric circles. Some of the finest examples in the British Islands are to be seen near Ilkley in Yorkshire. Similar ornamentation is to be seen at Locmariaquer, and on the Island of Gavr' Innis, in the Morbihan, Brittany, in the district renowned for the magnificent "French Stonehenge" at Carnac, as it may also be seen in the neighbourhood of Avebury and our own Stonehenge.

In Ireland precisely analogous markings, or "rock-scribings," as Mr. Wakeman calls them, are found, as at Mevagh, co. Donegal, on the sides of Knockmore Cave,

¹ App. to vol. vi, *Proc. Soc. Ant. Scot.*, pp. 104-5.

near Derrygonnelly, co. Fermanagh, as well as the magnificent series of double spirals at Newgrange, Dowth, and Loughcrew, co. Meath, which belong to a somewhat later stage of culture. "Until recently," says Mr. Wakeman, "these antiquarian puzzles have received but little attention from Irish archaeologists. Petrie does not seem to have noticed their existence; O'Donovan and O'Curry make no mention of them, nor do the older writers, except in one or two instances where a single stone or so is referred to, as bearing work of a mystic or barbarous character." The forms of these markings to be met with in Ireland are precisely the same as in every other locality in which they occur, viz., cups, cups and rings, the same with radial channel, concentric rings, penannular rings, spirals, stars, triangles and wheels, zig-zag and other lines. "Considerable attention," continues Mr. Wakeman, "has been given in recent years to the elaborate scorings on the rocks forming the great chambers at Newgrange and Loughcrew," and he quotes Col. Wood-Martin as saying, "In these Ireland possesses a collection of this species of prehistoric ornamentation which, in singularity, number, and quaintness of design is approached in point of interest only by some of the great stone chambers of the district of Morbihan."¹

Other archaic examples may be mentioned, such as those which are to be found on the rock on which the great cathedral at Seville is built; on the steps of the Forum at Rome; on the pedestal of a statue from Athens; in Scandinavia, in China, in India, and in North and South America.² Other instances of present-day

¹ *Wakeman's Handbook*, p. 24.

² Some ten years ago a considerable amount of turmoil was occasioned in the archaeological world by the alleged discovery of similar designs in a locality where they had not been hitherto noticed, by an artist named Mr. W. A. Donnelly, and subsequently by Mr. W. Bruce, F.S.A. Scot.

I refer, it need hardly be said, to the famous controversy aroused by the announcement made by Mr. Donnelly of his discoveries at Auchintorlie, Dumbrie, and Dumbuck, and by Mr. Bruce of his discovery at Langbank, all in the neighbourhood of Dumbarton on the Clyde, *cujus pars non minima ful*.

These discoveries consisted of a number of rocks inscribed with cup- and ring-markings, and with representations of the soles of human feet (these only possessed four toes), at Cochno and Auchintorlie, which in themselves only fall into line with discoveries previously made, and which, from the condition of the rocks, it seems hardly possible to regard as anything but "archaic." Unfortunately, the case is not so simple in respect of the hill-fort at Dumbrie, where among the "finds" said to have been discovered there figured inscribed oyster shells, which Prof. Boyd-Dawkins found to belong to the American species, and which must therefore have been introduced by some visitor, who was either a deliberate forger or a wag; nor in respect of the Crannogs at Dumbuck and Langbank, which Dr. Munro asserted to be mere "mediaeval" erections, but which Mr. A. Lang and I held—he with perhaps too much reserve; I with perhaps too much confidence—to be relics of prehistoric times. Among the "finds" in these latter were numerous objects, inscribed with cup- and ring-marks, ducts and lines, which it seems hardly possible to imagine anyone would be at the pains to forge.

A full account of the controversy, in which the present writer received some very unkind handling, will be found in Dr. Munro's book on *False Antiquities*, and in an article by him in *The Reliquary* entitled "Is the Dumbuck Crannog Neolithic?"; in Mr. A. Lang's book, *The Clyde Mystery*, and in a series of four articles by myself in the *Journal of the British Archaeological Association* from 1900 to 1904. It is only mentioned here because it led to an independent

usage may be noted in Fiji, in Easter Island, and other parts of the far Pacific, as well as in certain parts of Africa.

Moreover, among races who tattoo, particularly the Maories in New Zealand a very similar set of designs may be observed.¹

Coming now to the various theories which have been propounded as to the origin and significance of these mysterious signs, we note that these are all

study of the subject by Mr. A. Lang and myself, the result of which will be found in Mr. Lang's article, "Cup and Ring: an old puzzle solved," in *The Contemporary Review*, 1900 (subsequently published in *Magic and Religion*, 1901), and in my articles on "Some resemblances between the Religious and Magical Ideas of Modern Savage Peoples, and those of the pre-historic non-Celtic races of Europe," which was published in the same year, and was the result of an entirely independent study—for, at that time, I was quite unaware that Mr. Lang was taking the subject up—and in "Portuguese Parallels to the Clydeside Discoveries." Apart altogether from the immediate occasion of the controversy, I shall hope to carry the study to a further and more positive conclusion on this occasion than was attained previously by Mr. Lang or myself. In justice to Mr. Donnelly's memory, it may be stated that he consistently repudiated the idea of forgery, and maintained the genuineness of his "finds" to the day of his lamented death in the early part of 1906.

At the very height of the controversy came the publication of Messrs. Spencer and Gillen's book on *The Native Races of Central Australia*, followed subsequently by the same writers' *Northern Tribes of Central Australia*, where the present-day usage of the same method of ornamentation by the savages of the great island continent was described, both in the form of "rock-scribings"—in this case in the shape of paintings, not incised marks—and upon certain objects known as *Churinga*, which are the sacred and secret possession of the initiated among the tribes, which will be referred to more fully later on.

As I said in 1899: "There can be no possible question of 'forgery' in regard to the rock-markings at Cochno and Auchintorlie, for, fortunately, the discoveries were made and the drawings executed in 1895, while the Australian drawings were not published till 1899." Moreover, there is no reason why these Scottish markings, even to the representations of human feet, should not be as genuine as those previously described by Sir James Simpson.

We may remark here that on pp. 463-4 of his book, *Ancient Britain and the Invasions of Julius Caesar*, Mr. Rice Holmes makes a brief reference to the subject of "Dumbuck, Langbank, and Dumbuie," and airily dismisses it by saying that "Everything worth reading that has been written on the subject is included in two recent books, Dr. Munro's *Archæology and False Antiquities*, and Mr. Lang's *The Clyde Mystery*," thus ignoring the careful monographs which were contributed by the present writer to the *Journal of the British Archæological Association*.

Of all three he says that "it is admitted that they belong to a period *several centuries later than the Roman conquest of Britain*." (The italics are ours.) Notwithstanding this, however, he also says, with regard to the alleged resemblance between some of the "questionable" finds on the Clyde and certain other equally disputed "antiquities that recently startled the explorers of a Portuguese dolmen," which resemblance Dr. Munro states that he cannot see: "the reader, as Mr. Lang says, must decide for himself, *and I doubt whether he will see eye to eye with Dr. Munro*." (The italics again are ours.)

He would find it a difficult matter to reconcile these two statements, and indeed his note on the subject is somewhat confused throughout.

Apart from the question of the age of the Dumbuie Fort and the Crannogs at Dumbuck and Langbank, and of the undisputed objects found in them, in which I include the dug-out canoe and the Churinga-like objects found in it at Dumbuck, and elsewhere on the sites, I must hold to my opinion as to the rock-markings in the neighbourhood, which fall into line with those universally found, and point to totemism and the neolithic stage of culture.

¹ See p. 96 and note thereon.

founded on the assumption that they were executed with some definite meaning; for, as I have said elsewhere, "it is an axiom in anthropology that primitive man does not give himself trouble merely for an æsthetic purpose, but always with some practical object in view." This object might be religious, as in the case of the wonderful drawings on the walls in the dark recesses of caverns, and on pieces of mammoth ivory, etc., which were executed by the palæolithic dwellers in the grotto of Thayngen, the cave of La Madeleine, and the Robin Hood Cave in Derbyshire, and elsewhere. the religious motive being probably connected with what is known as "sympathetic magic"; the primitive cave-dweller, when he drew representations of the reindeer or the mammoth or the horse, or represented himself as hunting, with snakes escaping in the grass, or fishes filling up the borders and vacant spaces in the drawings, intended thereby to render the animals more subservient to his prowess, for the souls that were in them would be transferred by sympathetic magic to his picture of them, and their life would become his, and they themselves would then fall an easy prey to his spear.¹

Or the object might be of social, family, or tribal, *i.e.*, of totemistic significance, and the signs be recognized as badges of the clan or phratry. This would be most useful under the system of exogamous marriages, which usually accompanies totemism² wherever it exists, though independent of it, and later in origin, as Dr. Frazer shows. That this is the true meaning of the cup- and ring-markings, in all their various forms and developments, which are the subject of this study, is what we shall endeavour to prove, but before doing so it is necessary to give a passing reference to the theories put forward by previous students of the subject. Questions of space forbid our doing more than making mention of the various theories propounded by the learned Dr. Phené, the late Mr. Romilly Allen, Mr. Dymond, Miss Russell, Colonel Rivett-Carnae, Lord Avebury, Dr. Robert Munro and others, with regard to the origin and significance of these bewildering signs. The reader is referred to their articles as described in the bibliography attached to this study. We note that Mr. Romilly Allen concludes with the following pregnant remarks, exactly foreshadowing the line that has been pursued in subsequent research:—"If the enigma of the import of these mysterious cup- and ring-marks is ever to be solved it must be by careful research into the relics of pagan superstition, still lingering in out-of-the-way districts, and even found mixed up with Christian ceremonies, and lastly, by making careful

¹ A very remarkable series of drawings executed by the Bushmen in South Africa, some of which may be 500 years old, and others more recent, was exhibited in 1908 in the rooms of the Royal Anthropological Institute, by Miss Tongue.

Like their palæolithic prototypes, the drawings are found on the walls and inner recesses of caves, and they manifest the same freedom and skill and life as those which evoked the enthusiasm of M. Salomon Reinach. Cattle, sheep, and human figures are all portrayed with an artistic power and vraisemblance which are truly remarkable. See *Illustrated News*, June 21st, 1908; *Man*, 1909, 98.

The Esquimaux are also skilled draughtsmen, and many scholars hold that in them we have the representatives, if not the descendants, of the palæolithic race in Europe.

² See Frazer, *Totemism and Exogamy*, vol. iv, pp. 9, 287. (1910.)

drawings of the sculptures, topographical notes of the sites, and then instituting a comparative inquiry into similar remains found in other countries."¹

As regards the meaning to be attached to the symbols, Dr. Munro says: "Although much has been written on the subject, none of the theories advanced to explain their meaning has met with general acceptance. That they had a symbolic meaning in the religious conceptions of the people is evident from the frequency with which they are found on sepulchral monuments, but any interpretation hitherto advanced on the subject, beyond the general *religious* idea, seems to me to be pure conjecture." (*Prehist. Scotland*, p. 218.)

This was the state of the matter when Dr. Munro wrote in 1899; it is hoped that this paper will show that by 1908 we had advanced a little further, and that a solution more probable than any hitherto proposed, may be found, which will hold good unless and until some further light dawns from some at present unexpected quarter.²

¹ See Bibliography.

² In his recent book, *Ancient Britain and the Invasions of Julius Cæsar*, Mr. Rice Holmes ranges himself with those who would see in these markings some religious significance. Writing of the *Bronze Age* he says: "We may perhaps hope to find other clues to the religious ideas of the Bronze Age in megalithic circles, and in the engraved stones which have been already mentioned! . . . The most common devices are small circular depressions, called cup-markings and concentric circles; while occasionally groups of concentric circles are united by grooves." He then proceeds to describe the markings and the localities in which they occur, much as we have done, and as every writer must do, and continues: "The rings may, perhaps, in some instances be symbolical of sun-worship, for, on the cairn of Lough Crew in Ireland, and in Scandinavia, a few have rays" (apart altogether from the supposed meaning, the *rays* are, as a matter of fact, found in very many instances, from widely scattered localities); "and since we find them on the covering stones of cists, while in Australia similar designs drawn on rocks are magical or sacred, it would seem probable that they had some religious meaning."

He then refers to evidences of sun-worship in the British Isles, to the spirals, and to the swastika on a rock near Ilkley, all of which have been duly noted by us, and quotes Mr. Lang as saying that "similar markings on rocks, etc., in different countries may have different meanings." This latter remark is perfectly true as far as it goes, *i.e.*, in different countries, among different peoples, in different ages, the same marks might have a totally different definite meaning, *e.g.*, designate an entirely distinct totem or heraldic badge. But that they were all totemistic, and therefore of social not religious significance, this study will, we hope, make sufficiently probable. Again, in referring all such marks to the Bronze Age, Mr. Rice Holmes does not show sufficient discrimination.

In their *origin* cup- and ring-markings, or marks of similar design, have been shown to ascend to the Palæolithic Age, and, in Europe and the British Isles, to be peculiarly characteristic of the Neolithic Age. The natives of Australia know, or knew, nothing of bronze or any other metal. They may, therefore, be said to be characteristic of peoples in the neolithic stage of culture.

But they *survived* into the Bronze Age, and in combination with other designs became a characteristic of this age. And whereas spirals seem to have preceded circles among the Arunta, the reverse would appear to be true in Europe, so that where spirals are found, as at New Grange, etc., it is a sure sign that we are no longer in the early or primitive stage, but at a stage of later development—in other words, in the Bronze Age. Thus the way is prepared for the magnificent subsequent development of the spiral, simple and divergent, in late Celtic art, and in the Christian art of Ireland, both on stone and in manuscripts.*

* Rice Holmes' *Ancient Britain and the Invasions of Julius Cæsar*, pp. 205-207, and see pp. 177 and 183.

Passing by the theories which connect these markings with planetary or stellar maps, sundials and such like, which could by any possibility only apply to a very few cases in which they may seem to be arranged in some sort of definite order having some resemblance to the position of the constellations in the sky, or some distinct instance in which the cup and circle with the duct leading from the cup to the circumference of the circle and beyond might seem to be like a dial-plate and its gnomon, we remark the theory propounded by Bishop Graves, of Limerick, that they were intended for maps of the locality marking the position of the neighbouring raths or oppida for the benefit of wayfarers, whether the inhabitants themselves or strangers. Both Mr. Wood-Martin and Mr. Wakeman quote Bishop Graves at large. But the map-theory, as Mr. Wood-Martin says, "appeared to be a fanciful one, and the drawings were laid for many years on one side; finally, however, Bishop Graves, having re-examined his subject, came to the conclusion that his original theory was correct." In this, however, he has not been followed by any subsequent investigator.

Mr. Wakeman ranks himself among those who regard the signs as purely ornamental, forgetting the fundamental axiom as to primitive ornament quoted above.

Mr. Wood-Martin makes the pregnant observation: "The 'dot and circle' pattern is stated to be almost identical in Hittite, Cypriote, Cuneiform, and Egyptian. To solve the enigma of these scribings we must go afield. *What does this style of ornamentation represent to the minds of the aborigines of Australia?*" (The italics are ours.)¹

From the year 1899 onwards the solution of the problem has been sought, and, as we shall endeavour to demonstrate, found in the answer to this question, but before arriving at this point, it is necessary to note a further theory put forward by Col. Rivett-Carnac as late as 1903. In that year he read a paper before the Royal Asiatic Society, entitled "Cup-marks as an archaic form of inscription," in which he suggested that they were "a very ancient form of writing." At an earlier date Col. Rivett-Carnac had been inclined to associate the signs with the Lingam cult, and he refers to this theory again in the course of this paper; we shall see in the sequel how the two ideas may be combined by a reference not only to the evidence from Australia, but also to the "painted pebbles" containing alphabetiform signs which M. Piette discovered in the cave of Mas d'Azil, and which belong to the Palæolithic Age, and to the similar signs found on certain dolmens in

On p. 205 the author gives in a note a useful bibliography of the subject, including many references to the Proceedings of the Society of Antiquaries of Scotland, to which I have not thought it necessary to refer. This, with the bibliography given in this study, makes up a complete list of the literature bearing on the subject.

In the note Mr. Holmes remarks, "It would seem that certain cup-markings, at all events in the British Isles, France, Spain, and Scandinavia, belong to the Neolithic Age," and refers to Simpson and Cartailhac. He might have added Montelius. Thus he admits the point for which I contend, and gives the larger part of his case away.

¹ *Pagan Ireland*, pp. 47, 49; Wakeman, p. 36.

Portugal in 1903, down to the signs and symbols which distinguish the work turned out by modern potteries in civilized lands. It may be noted here, in passing, that Mr. Wood-Martin had already suggested that "cup- and ring-markings" might be "the first step made by primitive man towards writing."¹ And M. Cartailhac, writing in 1899 in *La France préhistorique d'après les sépultures et les monuments*, p. 247, had said: "Il est donc positif que les pierres à écaillures avaient une signification pour les hommes de l'âge de la pierre, et pour leurs descendants ou successeurs immédiats. Leur sens mystérieux était compris dans une grande partie de l'Europe." And he added: "Après l'âge de bronze elles disparaissaient en Europe."

Col. Rivett-Carnac notes what we have already stated, that these markings are "neither recent nor accidental, and that there is now hardly any rocky country in the explored world in which they may not be found," and, he continues, "but little importance has been attached to them, and the general verdict apparently is that, even admitting them to be ancient and artificial, they are at best but a rough form of ornamentation possessed of no significance, and therefore of just as little scientific interest." It is to dissipate this notion that this paper has been written. Col. Rivett-Carnac endeavours to do so by bringing forward a wealth of argument to prove his thesis that they are a primitive form of writing. He sees in the cup- and ring-markings the earliest efforts of primitive man to convey ideas to his fellows—a method which in some cases became at once alphabetiform, as in the early Ægean alphabets, whence our modern alphabets are now considered to have arisen, and in others passed through painful ages of hieroglyphic or cuneiform ideogrammatic forms to an alphabetiform system, whereby all ideas could be conveyed.

We come now to consider cup- and ring-markings in the light which has been thrown upon them by recent research among the aborigines of Australia.

It was in the year 1899 that Messrs. Spencer and Gillen's epoch-making book on *The Native Tribes of Central Australia* was published. This was followed in 1904 by the same authors' *Northern Tribes of Central Australia*, and in the same year the late Dr. Howitt's *Native Tribes of South-East Australia* was published. These, with Mrs. Langloh-Parker's *The Euahlayi Tribe*, 1905, form the classical authorities on the tribal and social arrangements and customs of the Australian aborigines.

Now the outstanding feature of all these tribes is that they are organized on a totemistic basis. It will be unnecessary in this article to define totemism,² or to point out wherein totemism in Australia differs from totemism in North America, whence the name is originally derived, as described by Mr. Hill Tout and others. Nor will it be necessary to enter into the question of the origin of totemism, as to "which there is much difference of opinion, and a number of hypotheses have been framed to account for it," and the subject was fully dealt with before the British Association by Professor Haddon in 1902. Dr. Howitt says:

¹ *Pagan Ireland*, pp. 43, 44.

² See Frazer, *Totemism and Exogamy*, vol. iv, p. 3. (1910.)

"It has always seemed to me that the origin of totems and totemism must have been in so early a stage of man's social development that traces of its original structure cannot be expected in tribes which have long passed out of the early conditions of matriarchal times. Yet if anywhere in the still savage regions of the world there are any living survivals of early totemism surely it must be in Australia that they are to be sought for" (p. 151). He then goes on to discuss the only three hypotheses of which he considers it needful to take account. These are (1) Messrs. Spencer and Gillen's theory that in Australian tribes the primary function of a totemistic group is to ensure by magic a supply of the object which gives its name to the totemistic group; (2) Dr. J. G. Frazer's views, that the Intichiuma ceremonies¹ appear to indicate that each totem group was charged with the superintendence of some department of nature, from which it took its name; (3) Mr. Herbert Spencer's theory, which has since been developed by Lang in his book, *The Secret of the Totem*, that plant and animal names were impressed upon each group from without, and some of them would stick, would be stereotyped, and each group would come to answer to its "nickname." Notwithstanding the wealth of argument and illustration with which Mr. Lang has advanced this theory, I must confess that to my mind Dr. Howitt seems justified in saying: "To me, judging of the possible feelings of the pristine ancestors of the Australians by their descendants of the present time, it seems most improbable that any such nicknames would have been adopted, and have given rise to totemism, nor do I know of a single instance in which such nicknames have been adopted" (p. 154).

Professor Haddon's hypothesis is that groups of people, at a very early period, by reason of their local environment would have special varieties of food, but, "taking all things into consideration, I feel," says Dr. Howitt, "that the most probable conclusion to arrive at is, that the Intichiuma ceremonies represent a very early form of totemistic belief, but beyond that there are not sufficient data to allow of a safe hypothesis as to the origin of the totemic names" (p. 155).²

¹ Sacred ceremonies performed by a local totemic group with the object of increasing the numbers of the totemic animal or plant.

² In Australia, as among all primitive races, names imply a mystic *rapprochement* between themselves and the persons who bear them, and, this being so, when the members of human groups found themselves, as groups, all in possession of animal group-names, and *had forgotten how they got the names* (all known groups having long been named), men, always speculative, naturally asked themselves, "What is the nature of this connection between us and the animals whose names we bear?"

Thus I agree with Dr. Pikler, *Der Ursprung des Totemismus*, when he says, "The germ of totemism is the *naming*," and further that "totemism has its original germ not in religion, but in the practical every-day needs of man." So Mr. Lang had written, *Social Origins*, "Totems, probably, in origin, had nothing really religious about them." Each man's name was originally *secret* to himself, and the idea of *sacredness* is a later development.

Yet another theory as to the origin of totemism has been propounded by Mr. Gomme in his most suggestive and fascinating book, *Folklore as an Historical Science* viz., that it emanates from "the industrialism of early woman from which originated the domestication of animals, the cultivation of fruits and cereals, and the appropriation of such trees and shrubs as were necessary to primitive economies. The close and intimate relationship with human life which

Be that as it may, the fact is that throughout Australia the social organization of the tribes is based on totemism, and that a gradual advance may be observed from a comparatively simple to a most complex and intricate system. Thus the Dieri tribe of South-east Australia have only two exogamous intermarrying classes and have preserved female descent, *i.e.*, the child belongs to the totem of its mother. The Kamilaroi, Wiradjuri, and others have four sub-classes and male descent. The tribes round Lake Eyre, in the centre of the continent, have developed eight sub-classes. Among these the Urabunna reckon by female descent; the Arunta, whose story, as told by Messrs. Spencer and Gillen, is a veritable romance, reckon by male descent; but there is this peculiarity about them, that totemism is reckoned by locality rather than by group, and the child belongs to the totem of the district in which it may happen to be born. How this is contrived will appear presently. Curiously enough, in spite of their possessing this complex and intricate system, *i.e.*, matrimonial classes which he himself acknowledges as later than the mere phratries of many south-eastern tribes, more advanced ceremonial, system of inheritance, and local magistracies, heredity in the male line, and in contravention of every principle which compels one under every phase of evolution to view the complex as a development from the simple, Dr. Frazer holds that the tribes of Central Australia, including the Arunta, "are the more backward, and the coastal tribes the more progressive." This opinion seems to proceed from a consideration of the possession or otherwise by the tribes of a belief in the "All-Father," with which we are not concerned here. The coast tribes for the most part possess this belief; the Arunta and other central tribes do not. The most probable theory to explain this is that these tribes once possessed it and have lost it. Having developed a highly complicated and, indeed, philosophical system, the belief in the All-Father became of no practical importance and was dropped. But in any case, with regard to Dr. Frazer's statement I echo Mr. Lang's words: "This is a hard saying!"¹

such animals, plants and trees would assume under the social conditions belonging to the earliest stage of evolution, and the aid which these friendly and always present companions would render at all times and under most circumstances, would generate and develop many of those savage conceptions which have become known to research"—"In short," as Mr. Sidney Hartland says, in his criticism of the book in *Mun*, 1908, 68, "totemism would arise from the connection imagined between a woman's children and the friendly animal, plant or tree."

There are many things that might be said in answer to this attractive but delusive theory. For one thing, as may be at once discovered by a reference to modern examples of totemism in Australia and elsewhere, the totem is by no means universally, if even generally, a "friendly," *i.e.*, domesticated animal, or a cultivated plant.

But Mr. Hartland has said sufficient to expose its fallacy, and with his criticisms I entirely concur—and Dr. Frazer does not refer to it at all. (1910.)

¹ Of course this is no contradiction of Messrs. Spencer and Gillen's statement that the Central tribes, including the Arunta, "have retained the most primitive beliefs and customs."

This may be perfectly true, and yet we must acknowledge that their social organization is the most advanced, and as regards the Arunta nescience of the facts of generation it is no

The Arunta system is based on the following beliefs: They hold that every living Arunta is descended, or rather, is the re-incarnation of an ancestor, who lived in what is known as the "Alcheringa" times. These are times beyond which thought cannot go, the far distant past, with which the earliest traditions of the tribe deal. Every Arunta thinks that his ancestor in the Alcheringa was the descendant of the animal or plant, or at least was intimately associated with the objects the name of which he bears as his totemic name. In most cases when the social arrangements are totemistic the totem animal or plant is sacred and tabu as food to the members of the totem group. This is the case in many Australian tribes, where it is a general custom that a man must not eat or injure his totem, but among the Arunta there are special occasions when the totem is eaten, and there is no rule against eating it at other times, though it must be partaken of sparingly. In this respect, as in many others, the Arunta are a law unto themselves. Returning to the Alcheringa ancestors, each of them is represented as carrying about with him or her one or more of the sacred stones which are called by the Arunta natives Churinga (the equivalent of the bull-roarer or whirler of other natives, but of such special significance that the local name is now well known and universally employed), and each of these Churinga is closely associated with the spirit part of some individual. Where they originated and stayed, as in the case of certain of the witchetty grub people, or where they camped in their wanderings, there were formed what the natives call *Oknanikilla*, i.e., local totem centres. At each of these spots a certain number of the Alcheringa ancestors went into the ground, each carrying his Churinga with him. His body died, but some natural feature, such as a rock or a tree, arose to mark the spot, while his spirit part remained in the Churinga. At the same time many of the Churinga which they carried with them, and each one of which had associated with it a spirit individual, were placed in the ground, some natural object again marking the spot. Thus the country is dotted over with these *Oknanikilla*, each one connected with one totem. The rock or tree marking the spirit's abode is known as the spirit's *Nanja*, and it is this idea of spirit individuals associated with the Churinga and resident in certain definite spots, which lies at the root of the present totemic system of the Arunta tribe. Now these spirits are ever waiting to be re-born, and consequently they are ever on the look out for likely women through whom they may receive re-incarnation. Here comes in a curious factor of Arunta life. Alone, or nearly

proof of primitiveness, but rather the fruit of their system of philosophy—"As each child is, in Arunta opinion, a being who has existed from the beginning of things, he is not, he cannot be, a creature of man's begetting."* Dr. Frazer still (1910) holds to this opinion as to the relatively greater primitiveness of the Central tribes. He may possibly, later on, see cause to modify this opinion (Preface, xiii). For the whole subject consult his magnificent monograph on *Totemism and Exogamy*, recently published.

* Spencer and Gillen, *Central Tribes*, pp. 124 (112-166); *Northern Tribes*, pp. 145, 150, 174, 330, 606. Frazer, *Totemism and Exogamy*, vol. i, pp. 96, 242. Lang, *Secret of the Totem*, p. 197.

so,¹ among the human race, whether savage or civilized, they are totally ignorant of the meaning and effect of sexual intercourse.² According to their belief it has nothing to do with the natural production of offspring; at best it only prepares the woman for the entry of the spirit-child. Consequently, a woman never knows when a spirit-child may enter, and, as a result, whenever she may become aware that she has conceived a child it belongs to the totem of that locality irrespective of the totem to which she or her husband may belong. Hence, among the Arunta the exogamous classes are totally distinct from the totemic clans. The child inherits the Churinga Nanja of his ancestral spirit, and consequently belongs to his own ancestral totem. In some localities the spirits are specially active, *e.g.*, at Alice Springs there is a stone, known as the *Erathipa* stone, which a woman has merely to visit to cause conception. Accordingly if a girl has to pass by this stone and does not wish to have a child, she will carefully disguise her youth, and try to make herself look like a very old woman.

When the spirit-child enters a woman, according to the tradition of the natives, the Churinga is dropped. When the child is born the mother tells the father the position of the tree or rock near to which she supposes the child to have entered her, and he and his friends thereupon search for the dropped Churinga. The latter is usually, but not always, supposed to be a stone one *marked with a device peculiar to the totem* of the spirit-child, and therefore of the newly born one. Sometimes it is found—having been, of course, provided by the *Aruna*, or paternal grandfather, for the purpose—sometimes it is not. In that case a wooden one is made from the tree nearest to the *Nanja*, and the device or brand peculiar to the totem is carved on it.

In each *Okanikilla*, or local totem centre, there is a spot called the *Ertuatulunga*. This is the sacred storehouse, usually a small cave or crevice in some unfrequented spot among the rough hills, carefully concealed. In it are numbers of the Churinga often carefully tied up in bundles.³ It may be noted that the name Churinga itself means a sacred and secret emblem. Though men and women are both alike in that each possesses his or her *Churinga Nanja*, yet whilst there comes a time when each man is allowed to see and handle his, *i.e.*, after the ceremonies of initiation, when the boy becomes a man, not only may no

¹ See Frazer, *Totemism and Exogamy*, vol. ii, pp. 94 *seq.*; vol. iv, pp. 9, 287.

² At the meeting at which this paper was read the Chairman of the Section (H), Professor Ridgway, threw doubts on this alleged nescience on the part of the Arunta of these plain facts of physiology on the authority of certain "German Lutheran missionaries." The chief of these is the Rev. C. Strehlow, for the value of whose authority see Frazer, *op. cit.*, vol. i, p. 186, note 2. But there is no disputing the fact of this ignorance. How to account for it is another question. Messrs. Spencer and Gillen are quite clear on the point. Dr. Andrew Lang and Dr. Frazer equally admit it, though interpreting it differently, and there is the further evidence of the Bishop of North Queensland (Dr. Frodsham) as to the same nescience on the part of the natives of that district. *Mon*, 1909, 86. See Lang, *Secret of the Totem*, 81, 189 *seq.* Frazer, *Totemism and Exogamy*, vol. i, pp. 93, 191.

³ 1 Sam. xxv, 29. (Dr. Frazer refers to this passage in his paper on *Folklore in the Old Testament* in the volume of *Anthropological Essays* presented to Dr. Tylor on his 75th birthday.)

woman ever see them, but they are even unaware of the existence of such objects. No woman dare pry into the mysteries of the *Ertnatulunga* and its contents at risk of death. Moreover the *Ertnatulunga* may be considered as the early rudiment of a city or house of refuge. Even wild animals once they come close to one become tabu and safe from the spear of the pursuing native, and the plants in the vicinity are never touched or interfered with in any way. When the boy has passed successfully through the ceremonies of initiation, and is considered worthy of the honour, he is painted on face and body with the peculiar device belonging to his totem, and taken to the *Ertnatulunga*. The old women are aware that he has been there, though they know nothing of the nature of the ceremonies, but to the younger women it is a matter of the deepest mystery, for no women dare even approach the gap in which is the sacred rock-painting and near to which lies the *Ertnatulunga*.

Thus we are brought to the subject of the rock-paintings. These are not peculiar to the Arunta and other tribes of Central Australia, being found all over the Continent, and having been often described by former investigators. But those previously described are not of the special type of which we are in search, and which we find among the Arunta. These rock-paintings may be divided into two groups: (a) those which may be spoken of as ordinary rock-drawings, and which fall into line with those already known, and (b) certain other drawings which belong to a class of designs all of which are spoken of as *Churinga Ilkinia*, and are regarded as sacred because they are associated with the totems. Each local totemic group has certain of these, specially belonging to the group, and in very many cases preserved on rock surfaces which are strictly tabu to the women, children, and uninitiated men. The designs on these *Churinga Ilkinia*, as on the *Churinga Nanja*, are each distinctive of some special totem, and are so understood by the initiated natives, so that they have only to look at them to know of what special totem they are the sign or badge. Now the remarkable thing about these special totemistic designs of the Arunta, both on the rock-paintings, the *Churinga Ilkinia*, and the *Churinga Nanja*, is this, that they consist of the very same patterns as the rock-sculpturings which we have been studying from all parts of the world.¹ There is the central dot, corresponding to the cup, surrounded by concentric circles or semi-circles, and arranged in varying patterns, sometimes joined by lines which run through and connect them, just as the ducts do in the sculpturings, and each varying pattern has its distinctive meaning, which the native at once recognizes as belonging to the witchetty grub, emu, plum-tree, or other totem as the case may be. The feet which accompany the designs in many cases, and of which we have so many examples in Scotland, are said to be the

¹ The same marks occur on small plaques of slate or schist in Portuguese neolithic sites, in paleolithic sites, and in Scotland, where, however, Dr. Munro considers them not of genuine antiquity; and the marvellous thing is that although Dr. Munro also denies the genuineness of the Portuguese "finds," he professes to be unable to see the resemblance between them and the Scottish ones, which, to the unprejudiced observer, *sauter aux yeux*.

prints left by Alcheringa ancestors. There are also many examples of spirals in Australia, and in Australia Messrs. Spencer and Gillen consider the circles to be debased spirals. They may be right as regards Australia, but there is reason to believe that the opposite holds good elsewhere; *i.e.*, that the circle is older than the spiral.

Considering then that primitive man may be held to have everywhere, though with local modifications, passed through the same or similar steps in his evolution from the lower to the higher plane of social organization, is it too bold an hypothesis to propose that in these Arunta drawings with their well-known and recognized signification we have, as Mr. Wood-Martin suggested, the solution of our problem, and to say that, subject to modifications suggested by others of the theories mentioned in the works of the authors we have named above, the basal meaning of cup- and ring-marks is not religious but social, and that wherever found they are totemistic in their origin, and point to the potent influence of magic, rather than of what is more specially comprehended under the name of religion?

Thus these mysterious signs may with justice be said to constitute as I have said elsewhere the heraldry of primitive man, and they would be known and understood by all whom it might concern, even as the Arunta understand them to-day, and as the followers of a knight in medieval times, his squires and men-at-arms, recognized the shield of their lord, wherever it was borne in the battle or the joust, or fluttered from the summit of his castle keep, and just as the flag is recognized among civilized races at the present time.¹

This discovery of what is in all probability the true solution of a problem which has baffled so many learned writers among the savages of Central Australia, is one of the romances of latter-day research, and is itself the justification of the

¹ In 1897 Mr. A. H. Keane (*The Import of the Totem*) wrote on the origin of Totemism:—

"Thus the family, the initial unit, segments into a number of clans, each distinguished by its totem, its name, its heraldic badge—which badge, becoming more and more venerated from age to age, acquires inherited privileges, becomes the object of endless superstitious practices, and is ultimately almost deified. . . . Its origin lies behind all strictly religious notions, and it was at first a mere device for distinguishing one individual from another, one family or clan group from another"—and in 1899, in *Man, Past and Present*, he formulated a theory of the origin of totemism on this basis. About the same period the present writer was developing his theory of totemism as "the heraldry of primitive man," an expression which he afterwards employed in 1903, and for which he claims originality, inasmuch as Mr. Keane's works have only become known to him in preparing this study.

Compare also the late Professor Robertson Smith on the subject of the Semitic *wasm*, or rock-scorings, and tattooing in early Arabia, in *Marriage and Kinship in Arabia*, pp. 245-251, and *cf.* p. 218. The important point to notice is that Professor R. Smith associates the "scorings on the rocks" with the "tattooing of the person," and connects both with totemism, and the distinguishing of tribe or clan, that is to say, both may well be called "the heraldry of primitive man," to use the term I have adopted. Nothing is said as to these "scorings on the rocks" being "cup- and ring-marks," but apart from that they may well be considered to come under the same category, and to be a further argument for the views advanced in this paper.

attention which is being given by all students of anthropology to the hitherto neglected, but often despised and fast-perishing representatives of primitive man still existent on the globe.¹

Taking into account every known ingredient of the problem, I ask: have we not here, as nowhere else, the solution of it? We cannot say positively that such markings have absolutely the same meaning wherever they are found, but are justified in saying that that meaning is totemistic, for primitive man is everywhere and always the same, *et plus ça change plus c'est la même chose*.

Further, as showing how at a later stage ideas of nature worship may be grafted on to the original stock, we note the primitive phase of the idea in the Arunta theory of the spirit-child conceived beside some sacred rock or tree. A similar notion meets us, as Colonel Rivett-Carnac points out, in Switzerland and Italy, and probably research would prove its existence elsewhere. The spirit-child belongs to the totem of the locality in which it is conceived, and the *Churinga*, both the *Nanja*, the portable stone or stick, and the *Ilkinia*, the rock-drawing, each sacred and secret, is the totem badge bearing the special pattern peculiar to that totem. Here we have the living and present meaning.

In treating of the Lingam cult we are touching, as Colonel Rivett-Carnac says, upon a delicate or rather, it should be said, *indicate* subject, but the perfected cult as it existed in Phœnicia and elsewhere in the East in historic times, and as it exists in India to-day, is adumbrated in the ideas of primitive man, as they survive among present-day superstitions in Europe, and the germs are to be found in the peculiar notions of the Arunta. Ancient stones and rocks inscribed with eups and rings are in many parts of Europe even still associated with ideas bearing a relationship to this primitive cult. Monoliths not only bear these marks, but are themselves symbolic of the mystery of the reproduction of life. In Switzerland such rocks are still known as "the babies' stone," and where they remain undisturbed the ordinary idea of the stork as the purveyor of a new brother will be accepted by no self-respecting child of the locality. All new-born babies are believed to be brought from the mysterious stone of the vicinity. So on Lake Como a "child's stone," as it was called, was recently destroyed near Schloss Rothburg in the Canton Vaud. So in Brittany and other Celtic districts childless women will bring offerings to the menhir, and many a great stone has been adorned on its summit with a cross.² The objection will be made, says Colonel

¹ Here also we have the answer to Dr. Frazer's doubt as to whether totemism ever existed in those parts of the world where it is no longer found. Whether or not it was ever a part of the social system of the primitive Aryans and Semites, it certainly existed, to judge by analogy, among the primitive inhabitants of Asia and Europe in the neolithic age, and during the prevalence of the neolithic stage of culture, *i.e.*, among the ancestors of the Iberian races, now represented by the Basques, and the short, squat, dark-skinned and dark-haired people who form the pre-Celtic substratum of the present population of Wales. The animal, reptile, and insect cults of Egypt also point to the prevalence of totemism in that country in prehistoric times. See Frazer, *Totemism and Exogamy*, vol. i, 86; iv, 13.

² This Christianization of the objects of pagan worship, and of pagan superstition, was a characteristic feature of the means whereby the Christian Church secured her hold in early

Rivett-Carnac, how could such an idea survive the ages that have passed between then and now? But they do survive. Superstitions, as we call them, are handed down in a manner which if marvellous is yet true. They belong to no particular race or clime, but are the *débris* of faiths which are alive at a certain stage in the evolution of culture in every race and clime, viz., the animistic as regards the outlook upon nature, the totemistic as regards the organization of society, and these *débris* are found more abundantly among certain races, *e.g.*, the Celtic, than others. Thus we refer the superstitions connected with *The Babies' Stone* and the menhir, and with sacred tree and rock, with their cup- and ring-markings in patterns of varying and intricate detail, to what may be called the "Arunta stage of culture," which stage no doubt developed in certain districts among certain peoples into a more definitely pronounced Lingam worship. Here we have only the preliminary stage—the germ of a world-wide cult, not the cult itself—totemism on an animistic basis, not religion.

Finally, there is no reason why we should deny the possibility that in cup- and ring-markings we behold one of the earliest efforts of our race to convey ideas by means of signs, and therefore that it is in this sense a form of writing. The Arunta read their meaning—both on rocks and on Churinga, and indeed they are known to employ Churinga on occasion, as "message sticks or stones," although in their case the Churinga is more in the nature of a safe-conduct, rendering the bearer tabu, than an actual means of conveying ideas. Other tribes, as the Itchimundi, do employ real message-sticks. These, however, are "merely a kind of tally, to keep record of the various heads of the message, and the markings have no special meaning as conventional signs conveying some meaning."¹ No Australian has developed anything that may at all be called writing. The alphabetiform signs on the pebbles discovered by M. Piette at Mas d'Azil belong to a still earlier stage of culture, for the caves in which they were found are palæolithic. Similar signs are found among neolithic dolmens in Portugal, in connection with cup- and ring-markings, and these also occur in certain localities in Scotland; and through the wanderings of the neolithic folk they may even lie at the root of the alphabets of the Egean, and form the germ of our European alphabets, as was said above. But if cup- and ring-markings are to be taken at all as a method of conveying ideas, *i.e.*, as a method of writing, it can only be of the very rudest, compared with which oghams and runes are finished alphabets. It is better to take them simply as totemistic signs, having regard to their Arunta affinity, and to affiliate them with heraldic tokens, and modern potters' marks, as being tribal and family badges, and marks of ownership.

Thus we bring our study to a close, and if we have succeeded in showing with any degree of probability that the true solution of the problem as to the significance of these mysterious signs is to be found in the still existent habits and

times upon the races both within and without the Roman Empire, and is a mark of the wisdom which led her, like St. Paul, to become "all things to all men."

¹ Howitt, pp. 691-710.

customs of the Arunta and other native tribes in the far-away Continent of Australia, we shall be more than satisfied. Severed as they were for untold ages from all intercourse with the rest of mankind they have preserved intact ideas which were common to the race in its early infancy, and like their own fauna and flora, they exhibit to peoples who have passed on to a later and more complex stage in the progress of evolution precious examples of the process of development in its earlier phases, and, as regards themselves, a means whereby the civilized races may arrive at a proximate understanding of the superstitions which are still rife among their own less cultured members.

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These papers are valuable for the general study and elucidation of the subject under discussion in this article, apart from the immediate circumstances which led to their being written, and apart altogether from the question of the genuineness or otherwise of the " Clydeside Discoveries" at Dumbuck and Dumbaie, which made so great a stir in 1899 and the following years.

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Hoernes :—

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Der Diluviale Mensch in Europa, 1903.

In this latter book, p. 138, may be seen an illustration of an engraved bone belonging to the *Paleolithic* Age, from Moravia, bearing precisely the same markings, and of almost the same shape as the Australian *Churinga*, and the similar objects found at Dumbuck and Dumbaie, showing the persistency of type in the ornamentation of primitive man, whether the meaning was magical, religious, or totemistic. Lang, *Secret of the Totem*, p. 77, says : " The things were probably talismans of one sort or another," and compares them with the similar objects from the Portuguese dolmens as I had already done. But though talismans or amulets of uncertain import in *Paleolithic* times, this paper has, I hope, shown the inherent probability that in later times and amid every variety of race, they would have a *similar*, if not identical, meaning with that which they possess among the Arunta of to-day.

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For a full discussion of "totemism" in its latest aspects, I would refer to Dr. A. C. Haddon's Presidential Address to Section H of the British Association at Belfast, 1902, and for the relationship between "Religion" and "Magic" to Mr. E. Sidney Hartland's Presidential Address at York, 1906, in which special mention is made of the Arunta customs and beliefs.

[The above was written in 1908; now, 1910, Dr. Frazer's great book stands forth as *the* unchallenged authority on the subject, although one may assign the "Origin of Totemism" to other causes, besides those postulated in his present theory of its "conceptional" origin, based on the ideas of the Arunta.]

ON SOME SAXON BONES FROM FOLKESTONE.

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[WITH PLATES XX, XXI.]

WE know very little of the stature and physique of our Saxon forefathers. It is true that a fair number of their skulls are in different museums, but of the rest of their skeletons hardly anything seems to be known. Apparently the subject is of little interest since, during the last century and a half, over 1,300 graves of Saxons have been opened in Kent alone and many hundreds of others elsewhere in England, and yet I know of only one complete skeleton of a Saxon available for study, and that is not in any of our great anthropological museums or universities, but in the comparatively small and little known museum of Folkestone.

There is an impression, founded on the writings of ancient historians, that the Saxons were very big and strong men, but impressions of this kind are not always trustworthy and, as in the time to come people may be more interested in the evolution of our race than they are at present, it seems advisable to record what I can of the bones found in the latest Saxon burial ground investigated.

This seems to me the more important since there are not so many more known Saxon graveyards to explore, and our future knowledge will have to depend upon chance excavations bringing to light bones in unsuspected places as in the present instance.

In the winter of 1907 the Folkestone Borough Authorities were widening the sharp bend on Dover Hill at the point opposite that from which the footpath takes a short cut to join the road again lower down.

In doing this a number of skeletons were disturbed and it was very soon recognised by means of the arms and ornaments which were found with them that this was one of the Saxon burial places so numerous in Kent. Like most of the others a southern slope had been chosen for its site.

As far as I know no anthropologist or anatomist saw the actual disinterments. I was working at Hythe, six miles away, at the time, and I fear that some definite knowledge of the origin of the Kentish men may have been lost by my deciding to attend to Hythe bones which would have awaited my leisure instead of hurrying to Folkestone to examine and try to collect the very valuable material which was being exposed day by day.

Fortunately the Borough of Folkestone had in its engineer, Mr. A. E. Nichols,

a man who recognised the possible importance of the find ; he made a careful scale plan of the exact position and orientation of every skeleton brought to light as well as a photograph of nearly every one before it was removed.

One skeleton he removed uninjured by sawing away the ground in which it was embedded and pushing an iron plate below it after the saw. In this he did what few anthropologists would have had the skill or resources to carry out, and procured what I believe is the most valuable Anglo-Saxon specimen in the world.

This specimen is now in the Folkestone Museum, and I am told that it was only after considerable debate that it was accorded a resting place there, since some of the committee thought that so gruesome a sight would raise a feeling of resentment among the visitors. This is a psychological attitude which will be difficult to understand in years to come, but is very important for anthropologists to grasp at present.

I am glad to hear the museum authorities lost nothing by the broad-minded decision to which they came, and that the skeleton has proved one of the most attractive exhibits in their collection as well as being, I believe, the only complete skeleton of a pre-Christian Saxon in any museum in the world.

All the arms and ornaments dug up were carefully collected, photographed and placed in the same museum, where they may be seen to-day.

Unfortunately Mr. Nichols had no practical experience of anthropometry, but his common sense suggested the advisability of placing a 5 feet measuring rod by the side of many of the skeletons before they were photographed and of recording the height of all as far as it could be done.

When the widening of the road was finished all the bones were carefully placed in a stout wooden chest and buried about 8 feet deep in a position the exact site of which was recorded.

In the summer of 1909 I visited Folkestone Museum to see the skeleton and was given every help in measuring it, but the question which needed settling was "How typical was this specimen of the rest?" Accordingly, after prolonged correspondence, I obtained permission to reopen the buried chest and to dig for more skeletons in the neighbourhood.

For this permission I am indebted to the courtesy of Lord Radnor, the lord of the manor, as well as to that of the Folkestone Borough Authorities.

In April, 1910, I visited the site of the burial place, and found that while the widened road had cut into it on the south-east, a very large disused chalk pit had evidently destroyed the greater part of it to the north. I was kindly provided with an assistant who had great experience in the former disinterments, and with his aid I cut a series of narrow trenches to the west and north-west of where the last skeletons had been found (32, 33, 34 and 36 on plan, Fig. 1). These trenches ran N.E. and S.W. so as to strike the graves at right angles and, as they were only 5 feet apart, it is unlikely that any graves were missed.

The soil was sandy and singularly dry and porous, while from 18 inches to 4 feet below the surface the chalk began abruptly.

The practice of these Saxons was to dig down to the chalk and then merely to cut out a bed for the dead, but not to go any depth into the chalk. I fancy that it is to this practice that the preservation of the bones through these fourteen centuries is largely due, because those bones which I found deep in the chalk very quickly crumbled into dust on exposure to the air. I am told that at Sarre the graves were cut right down into the chalk, but how far this affected the preservation of the skeletons there is now no means of knowing.

In this way I found four more graves, which brings the total number up to forty. From one of them I obtained the perfect skull, shown in Fig. 7, as well as the earthen flask (Fig. 2) which is now in the Folkestone Museum.

This flask closely resembles that figured in the *Thesaurus Craniorum* of Barnard Davis from the Saxon burial ground of Ozingell, near Ramsgate, and, like it, was found lying on the left side of the head. Hitherto, these flasks have only been found in the graves of Kentish Saxons. Many of them were taken from the great burial ground of Sarre, in Thanet, and are figured in *Archæologia Cantiana*.

The sex of the skull accompanying the flask is not certain, because the grave was situated on the edge of the chalk pit already mentioned, and in excavating this, the femora, on which I usually depend for sexing purposes, had been removed, as had also the pelvis. From the appearance of the clavicles and humeri as well as from that of the skull, I am strongly of opinion that it belonged to a woman.

One of the characteristic bronze pins was found in this grave, as was also a bronze stud. Both of these articles are shown in Plate XXI, Fig. 3, and the latter is the only good reason for doubting the sex of the individual, since these studs were used for fixing the shield bosses on to the wooden shield. Still, as no shield boss and no spear were found it is possible that the stud may have been used for some other purpose.

The second grave contained the skeleton of a young adult, also very difficult to sex; indeed, as Beddoe has already remarked, the difficulty of accurately distinguishing between the sexes is greater in Anglo-Saxon skeletons than in any others owing to the male skulls being often very feminine in type as well as to the fact that the females are often extremely well developed. In no case that I have met was the pubic portion of the pelvis sufficiently well preserved for the sex to be identified by it, and instead of the anatomist being able to distinguish 70 per cent. of the sexes as he usually can by the skull, he is lucky if he can identify 50 per cent. The articular ends of the femora and humeri of this skeleton were just on the border line between those of the two sexes, so that I dare not commit myself to any definite conclusion, though I fancy it is female. In trying to remove this skull the cranial bones came apart at the sutures, and the facial part with the forehead was all I was able to save.

In the last two graves (Nos. 39 and 40) the remains were too friable to bear moving and the skulls had been crushed to pieces by the weight of the earth. No ornaments were found in these graves, while from the damp and rotten

condition of the bones it was probable that any iron implements would have long since rusted away.

Both these last graves went deeper into the chalk than did the others, and to this I ascribe the bad preservation of the remains.

The second day's work at the trenches was disappointing and makes one fear that the edge of the graveyard has been reached, while the greater part of it occupied the site of the chalk pit. I have heard many tales of skeletons being dug up in past days by the chalk workers, but the local country people do not seem inclined to enter into any details, and apparently know a good deal more than they think it wise to tell.

The next day's work was to open the chest which had been buried with such care, but on reaching it I was disappointed to find that the wood was quite rotten, while the bones inside were so damp that they broke with the slightest touch. There was not a single skull with the face attached, while many of the crania fell to pieces in the attempt to extract them from the bones among which they were packed.

I do not think it any exaggeration to say that these bones had decomposed more during their three years' stay in this deep damp grave than they had in the fourteen hundred years during which they had lain in the porous soil 2 to 4 feet below the surface.

The burial of these bones so deeply was the one mistake which Mr. Nichols made in connection with them, and it is one which I do not think I should have foreseen, though now I have learnt how well bones keep just above the chalk, and how badly when sunk into it.

After working at the bottom of this deep grave for a long time in a very cramped position, I was able to extract and to pass up to my assistants enough material to fill two packing cases, and it is on this, combined with what I dug up myself, and with Mr. Nichols' photographs and notes, that the following report is founded.

Photographs.

Fig. 1 records the position and orientation of the skeletons. It will be seen that they lie in slightly irregular rows, the general direction of which is N.N.E. and S.S.W. This was also the orientation of the four skeletons which I dug up.

The orientation is not perfectly regular, and in the case of two skeletons in one grave (Nos. 30 and 31) it will be seen that the heads are almost due north.

In the *Victorian History of England* (vol. i) is a complete record of the various Saxon burial-places in Kent, and of the disinterments which have taken place from time to time. A study of this shows that the graves were generally in rows, and that the usual disposition of the rows is either N.E. and S.W., as at Barfreston, or N. and S., as they seem to have been at Breach Down, Sibertswold, Buttsole and Gilton, near Ash. When the bodies lie nearly E. and W. the head is almost always a little to the north of west, so that the face looks a little south of

East. In a conversation with Mr. Sebastian Evans, who was for some years Secretary of the Kentish Archæological Society and has been present at many

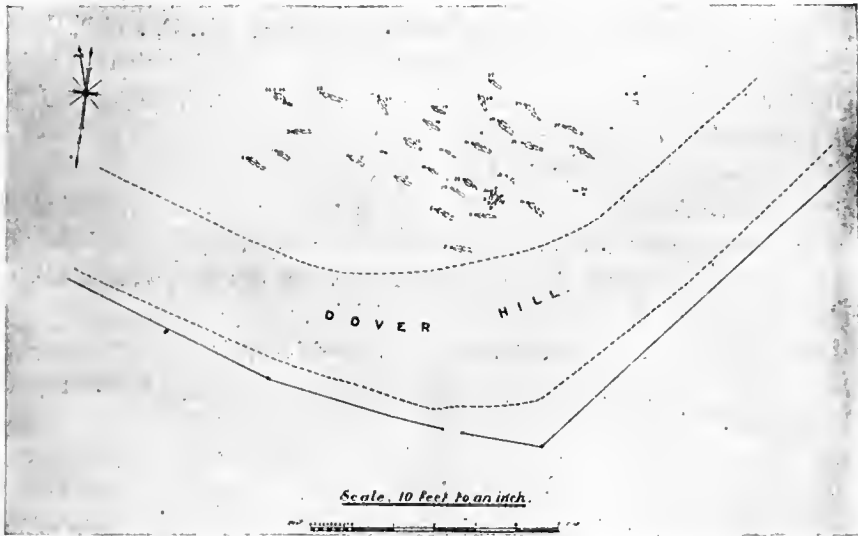


FIG. 1. PLAN OF THE BURIAL GROUND.

Saxon disinterments, I learn that there is a theory that the differences in orientation depend on the time of year at which the bodies were buried. The graveyards are almost always on open ground sloping to the S. or S.W., and the belief is that the face was always turned to the position of the rising sun at that particular time of the year.

Plate XXI, Fig. 3, shows the character of some of the arms and ornaments, while Fig. 2 is the vase which I found in Grave No. 37 to which I have already referred. With reference to the sex of this skeleton it is interesting to note that the *Victorian History* records that "a bottle-shaped vase of buff ware was found at the head of one woman's grave at Kingston, between Canterbury and Dover." As it has certainly been found with male skeletons the inference is that it is of no sexual significance. I am not, however, able to discuss these relics, and only produce



FIG. 2. JAR FOUND ON THE LEFT SIDE OF THE HEAD OF A FEMALE SAXON.

them as evidence that the bones undoubtedly belong to the early Saxon period and, in the opinion of experts, to Saxons who lived during the sixth century. It will be noticed that I am using the term Saxon in its widest significance.

Here I may state that the only knowledge which Mr. R. Smith, the Saxon expert at the British Museum and author of the extremely valuable article on "Saxon Remains in Kent" in the *Victorian History*, vol. i, had of this burial ground at the time of writing was that a "radiating brooch" like those found along the Middle Rhine came from here.

This came to Faussett's knowledge as early as 1857 (see *Inventorium Sepulchrale*), and was possibly one of the finds of the chalk workers. It is at present, I believe, in the Liverpool Museum, though undoubtedly its proper place is with the rest of the collection in the Folkestone Museum.

Plate XXI, Fig. 1, shows the skeletons lying in their shallow graves. The superjacent soil has been cleared away and the scooping out of the chalk, already referred to, is seen.

The skeleton at the lower part of the illustration shows the characteristic method of burying. The body lies on its back with the bent forward head raised on a pillow of chalk. This is a point of great technical importance in exhuming the skeletons, since the skull is on a higher level than the rest and runs a risk of being damaged by implements unless great care is used.

Plate XX, Fig. 1 (No. 27), shows the photograph of what I should unhesitatingly describe as a woman's skeleton. According to the measuring rod she was about 5 feet 3 or 4 inches in stature; the bent forward head shows the usual Saxon length and narrowness, while the elevation of the clavicles is very characteristic, and suggests that the bodies had been lowered into the grave by someone whose hands were under the armpits.

Plate XX, Fig. 2 (No. 24), is equally certainly, I think, a man's skeleton; his height was 5 feet 7 inches.

Plate XX, Fig. 3 (No. 14), is, I fancy, the skeleton of a woman, judging by the skull and the small size of the heads of the thigh bones; her height was about 5 feet 3 or 4 inches. The head has evidently fallen to one side and, like that shown in Plate XX, Fig. 1, illustrates very well the characteristic prominence of the frontal eminence.

It will be seen that the faces of both these skulls are orthognathous.

Plate XXI, Fig. 2, shows that the bodies were occasionally buried with the legs flexed, while Plate XX, Fig. 4, shows that occasionally two bodies were buried in one grave. From the photograph I think that these were two women—certainly one was, because the characteristic hook-like chatelaine was found in the grave, and this, as far as I have seen, is always the sign of a female.

The Examination of the Bones.

It must be understood that with the exception of the parts of two skeletons which I dug up myself and the one in the museum at Folkestone, these bones are all I could rescue from the chest in which they had been re-interred. They are often very imperfect, though some I have been able to piece together. They are now in the Museum of the Royal College of Surgeons and available for future research.

Skulls.

The material here consists of—

- A. The skull which I dug up in grave No. 37 with the earthenware flask beside it. It is, I think, that of a female, and is now in the Royal College of Surgeons Museum.
- B. The skull of the skeleton in the Folkestone Museum taken from grave No. 4 (see Fig. 1). This skeleton I felt sure was that of a female when I saw it a year ago. The heads of the femurs measure 4.5 cm. across, which is the border line between the two sexes according to Dwight ("Size of the articular surfaces of the long bones as characteristic of sex," *American Journal of Anatomy*, vol. iv, No. 1, p. 19). The heads of the humeri I could not measure owing to the skeleton being still embedded in soil surrounding it. On more careful examination I find that the left hand still grasps the chatelaine which is characteristic of a woman and, I believe, of a matron, so I think that there is little doubt of the sex.
- C. The face, forehead and lower jaw of the skeleton I dug up in grave No. 38. This is a young individual, the teeth being very slightly worn and all the sutures unossified. I cannot sex this, as the articular ends of the long bones are transitional, but it shows none of the characteristics of a well-marked male skull.
- D. A cranium without the face. The frontal region is damaged, but it is apparently male.
- E. A cranium without the face; almost certainly male.
- F. A cranium without the face; probably of an elderly female.
- G. A cranium without the face; probably of a female over 40.
- H. The vault of a skull from the nasion to the lambda. The greater part of the parietals are present but the temporals are wanting.

In addition to these there were frontal bones more or less perfect.

From these fragmentary remains I have been able to gather the following information.

Cephalic Indices.

I am no great believer in indices, but as they are usually considered of great importance I give them.

a. BREADTH INDEX.

Skull.	Ophryo-maximal length.	Glabello-maximal length.	Breadth.	Breadth index.
A. ♀ ?	178	177	134	753
B. ♀	178	179	137	770
D. ♂ ?	194 about	—	147	757
E. ♂	191	193	143	743
F. ♀ ?	180	185	129	717
G. ♀	181	182	128	707

The average breadth index of these six skulls, calculated with the ophryo-maximal length, therefore, works out at 741, but I think that it is more important to realise that the average length is 184 mm., while the breadth is 136 mm.

When this is compared with R. J. Horton Smith's paper on Saxon skulls (*Journ. Anthropol. Inst.*, vol. xxvi, 1897, p. 95) it will be seen that he gives 720 as the index for South Saxons, 740 for East Angles, 750 for West Saxons and 757 for Jutes, though he was generalising on one Jutish skull which he did not measure himself. In the College of Surgeons Museum are six Kentish Saxon skulls, all of them male (one of which, by the way, is Horton Smith's Jute). Their breadth index is 766 (average length 188, average breadth 144). It will be noticed that I hesitate to call these Folkestone Saxons Jutes, although it is generally assumed that all Saxon skulls dug up in Kent are of that race. We have it on Bede's authority that the Jutes did land in Kent, but we have no right to think that none but Jutes landed here. Shore, in his *Origin of the Saxon Race* (London, 1906), gives philological reasons for thinking that the various Teutonic tribes who landed in this country as well as probably many Wends or Vandals, who were Slavs, penetrated into one another's districts in a very indiscriminate manner. One evidence of this is that the family of Billings have left their name in some fifteen different parts of England.

We can, however, say this, that the earthenware vases have never been found outside Kent and that they have been dug up at Sarre, at Ozingell, at Kingston near Canterbury, and now at Folkestone, so that it is probable that people having the same funeral customs were buried in all these cemeteries, while from the six

crania saved at Folkestone and the six others in the R.C.S. Museum it seems that these Kentish Saxons or possibly Jutes belonged to a tribe which were not so markedly dolichocephalic as were some of the others measured at Cambridge, though whether this is due to increased breadth or diminished length must be determined later.

β. HEIGHT INDEX.

Skull.	Ophryo-maximal length.	Basi-bregmatic height.	Index.	Auricular height.	Index.
A. ♀? ...	178	136	764	117	657
B. ♀ ...	178	122	685	112	629
D. ♂? ...	194 about	—	—	125	644
E. ♂ ...	191	127	665	118	618
F. ♀? ...	180	133 ¹ about	739	122 ² about	678
G. ♀ ...	181	135 ¹ about	746	114	630

From the foregoing results it appears that the average height index taken from the basion is 720 while the average auricular height index is 642. The former compares as follows with Horton Smith's results:—West Saxons 710, South Saxons 700, East Anglians 710, one Jute 745.

It looks rather as if these Folkestone skulls had a higher head in comparison with its length than that of other Saxons, but I am now at work on complete measurements of all the Saxon skulls in the country, and until that is done I do not intend to press comparisons far.

Horton Smith says that the "extreme length and lowness" of the Saxon skull are its chief characteristics. I do not think that this is quite fair to the Saxons. It is true that they have a somewhat low height index, but this is because of the length of the skull rather than its lowness. It will be seen that the average height of my five skulls is 131 mm., and it will also be shown later that this actual height agrees wonderfully closely with that of other Saxon skulls. If this height is contrasted with the table given in my paper on the "Hythe Crania" (*Journ.*

¹ In skulls F and G the anterior margin of the foramen magnum was absent, but I find that by subtracting 10 mm. from the distance between the posterior margin of the foramen and the bregma the basi-bregmatic height may be obtained.

² In skull F the auditory meatus was absent, and I have had to localise it by taking the average angles from other parts of the skull to it and seeing where these intersect. I am able to do this from having a record of these angles in eighty Hythe skulls and in over thirty from Rothwell, and I find by experimenting with these that I can almost always localise the meatus within 3 mm.

Anthro. Inst., vol. xxxviii, p. 430), it will be seen that, considering there are male and female skulls in the series, the height is the same as that of the Hythe Crania, while it is greater than that of the Whitechapel, Moorfields, Upchurch, Dover, Bavarian, Wurtemberg and French series.

I have on several occasions pointed out the misleading results of trusting to indices, and feel sure that the only fair comparison is that between the actual lengths, breadths and heights of several series of skulls.

Looked at from this point of view it will, I think, be found that the characteristic features of the Saxon skull are that it is long and fairly high but distinctly deficient in breadth. This is my experience at present, but I shall of course be allowed to confirm or modify it as my experience in measurements grows.

The average auricular height of the six skulls in this series is 118 m.m. If this is contrasted with the table already referred to it will be seen that, considering there are probably four females to two males, the auricular height of these Kentish skulls is above rather than below that of most English and European collections there recorded.

Projection Contours.

To my mind the fairest way of judging a collection of skulls of any particular race is to construct a diagram which will show in a graphic manner the average contour of the series from different points of view. This method gives the describer a large amount of labour but it results in a clearer idea of the characteristics of the skulls than numbers alone can give. Certainly it is preferable to tables of indices alone, which, to my mind, are misleading and abominable inventions. I have given a description of my method of producing these average contours in the *Proceedings of the Anatomical Society*.

The profile is taken with a special craniometer which records the distance and angle of various points in the mid line of the skull from the external auditory meatus, while the full face and vertex are obtained by projecting certain points on to a sheet of glass and recording their latitude and longitude. If it is preferred a projection drawing may be made of each skull with a periglyph, orthodioscope or diagraph, but, in order to get an average contour, each of these must be subsequently measured and the various measurements added together and divided by the total number of skulls, so that it is really a saving of labour to take the measurements direct from each individual skull.

The actual measurements must of course be recorded in order that the range of variation may be studied, and that any particular skull may be reconstructed at will.

a. Profile view (Norma lateralis).

Unfortunately I have only two skulls with the face attached. They are A and B, both presumably females. The measurements and angles are as follows, 90° being the base line from the middle of the external auditory meatus to the lower

	A.		B.		Average.		Average of seven other ♀ Saxon skulls.	
	Angle.	Distance in mm.	Angle.	Distance.	Angle.	Distance.	Angle.	Distance.
From External Auditory Meatus to—	°		°		°		°	
Chin	135	122	137	115	136	118	136	111
Lower incisor point	125	106	125	100	125	103	124	98
Upper „ „	113	100	112	94	113	97	114	97
Nasal spine	108	95	100	89	104	92	106	90
Nasal bone	absent.		80	95	80	95	84	96
Nasion	75	90	68	90	71	90	73	92
Glabella	69	97	60	97	65	97	67	98
Ophryon	63	103	55	102	59	103	61	102
Frontal eminence ...	53	113	45	109	49	111	49	112
Vertex at 30° ...	30	118	30	113	30	116	30	116
Bregma	12	117	8	112	10	115	11	115
Vertex at 340° ...	340	119	340	112	340	116	340	117
Lambda	318	108	310	109	314	109	313	107
Midway between lambda and inion.	297	95	295	101	296	98	296	97
Inion	285	79	286	93	286	86	277	80

margin of the orbit and 0° the vertical line running upward. This diagram I think, speaks for itself, and shows how ridiculously alike the cranial contour of the two Folkestone skulls is to that of seven other Saxon females taken from the Royal College of Surgeons Museum (dotted line). There is a little difference in the position of the inion, while the lower jaw of the Folkestone skulls projects more forward. The likeness of the contour makes me think that I am right in my sexing of these two Folkestone skulls.

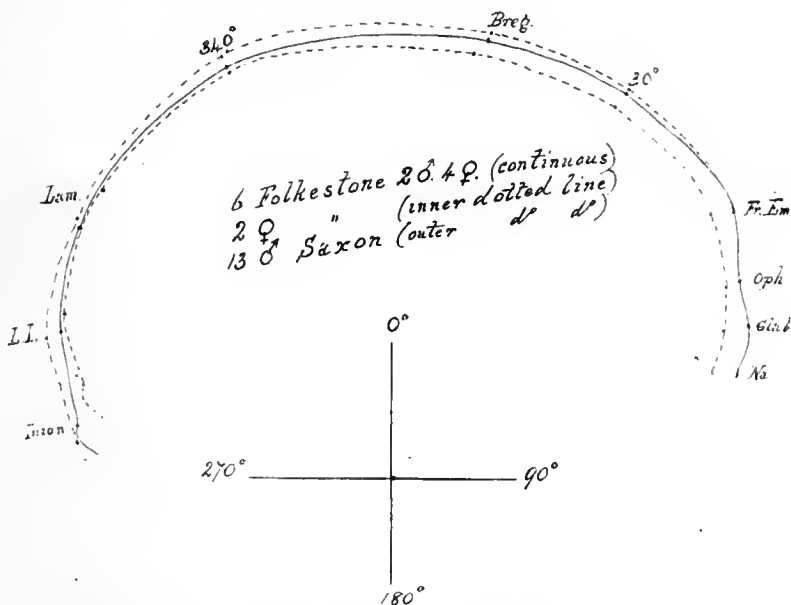


FIG. 4. CRANIAL CONTOUR OF FOLKESTONE SAXONS COMPARED WITH THOSE FROM ELSEWHERE.

For comparison I have added in this figure the contour of the two females A and B alone (shown in the inner dotted line), and also the average contour of thirteen male Saxon skulls taken from the Royal College of Surgeons Museum (shown in the outer dotted line).

The two dotted lines I know are properly orientated since the face was present in all the skulls of which they were composed, but in the six crania of which the continuous line is an average the faces were mostly absent, and I had to orientate four of them by taking the bregma as 11° in front of the external auditory meatus, this being the average of the thirteen male as well as of the seven female Saxon skulls in the Royal College of Surgeons Museum.

That this method is successful is shown by the closeness of the contours; the continuous and outer dotted lines, indeed, are absolutely superimposed in the forehead region.

The lesson which I learn from these contours as far as they go is that Saxon skulls are fairly homogeneous in sagittal section while those from Folkestone are quite characteristic of Saxons elsewhere.

β. The skull from above (Norma verticalis).

The method I adopt for obtaining an average of the norma verticalis of a series of skulls is to divide the sagittal length into eighths and to take the breadth on each side at some of these points. In addition the site of the maximal skull breadth and the position of the bregma, lambda and often other points such as the pterion, obelion, stephanion, etc., are noticed. A glance at the table and diagram will, I think, make the method clear.

It is, of course, very difficult to adopt this method with fragmentary or even slightly, damaged skulls, for, unless the total length is obtainable, the fractions cannot be determined.

The vertical contours of five of these vaults (A, B, E, F and G) are available and an average can be gained from these.

In the following table of measurements each skull has three lines devoted to it; the first of these represents the distance from the most anterior point which can be seen, usually the glabella, while the other two show the breadth of the skull on the right and left sides at this point. In this way asymmetry may be recorded.

The last measurement in the table shows in mm. how far the most posterior point of the skull is to the right or left of the middle line, because it is seldom that the occipital region is symmetrical on the two sides.

	A (♀).			B (♀).			E (♂).			F (♀ ?).			G (♀).			Average.		
	M.	R.	L.	M.	R.	L.	M.	R.	L.	M.	R.	L.	M.	R.	L.	M.	R.	L.
Length ...	175	—	—	183	—	—	191	—	—	185	—	—	182	—	—	183	—	—
Half ...	88	67	67	92	67	68	96	70	71	92	64	65	91	62	61	92	66	66
Quarter ...	44	58	56	46	55	57	48	60	59	46	55	55	45	53	53	46	56	56
Three-quarters ...	132	55	60	138	61	63	144	63	65	138	54	65	135	63	—	138	59	63
Seven-eighths ...	154	42	45	161	45	48	168	50	56	161	42	48	157	52	45	161	46	48
Least frontal br. {	22	53	—	—	—	—	—	—	—	20	46	—	25	50	—	22	50	—
	27	—	46	22	48	46	23	52	49	32	—	45	30	—	47	27	—	47
Exterior angular {	20	56	—	21	52	—	—	—	—	20	51	—	broken			21	53	—
posterior {	22	—	51	23	—	53	24	54	53	32	—	49				25	—	51
Bregma ...	69	—	—	93	—	—	84	—	—	75	—	—	87	—	—	82	—	—
Lambda ...	166	26	32	178	18	28	184	33	38	177	25	32	170	38	34	175	28	33
Maximal breadth ...	100	67	69	114	68	69	116	70	73	100	64	66	182	64	65	122	67	68
Posterior point ...	—	—	—	—	10	—	—	—	15	—	—	8	—	10	—	—	—	—

The diagram shows the contour obtained from these figures. Just outside the continuous line is a dotted line which represents the average contour of six of the long skulls from Hythe and is very like those at Rothwell. These are, I believe, fairly representative of the skulls of fourteenth and fifteenth century English people. The short Hythe skulls have a different shape and are at present unexplained. These six skulls were male and female, though there were more males among them than in the Folkestone group. It will be noticed that in the more modern skulls the breadth is greater in proportion to the Saxon than is the length. The

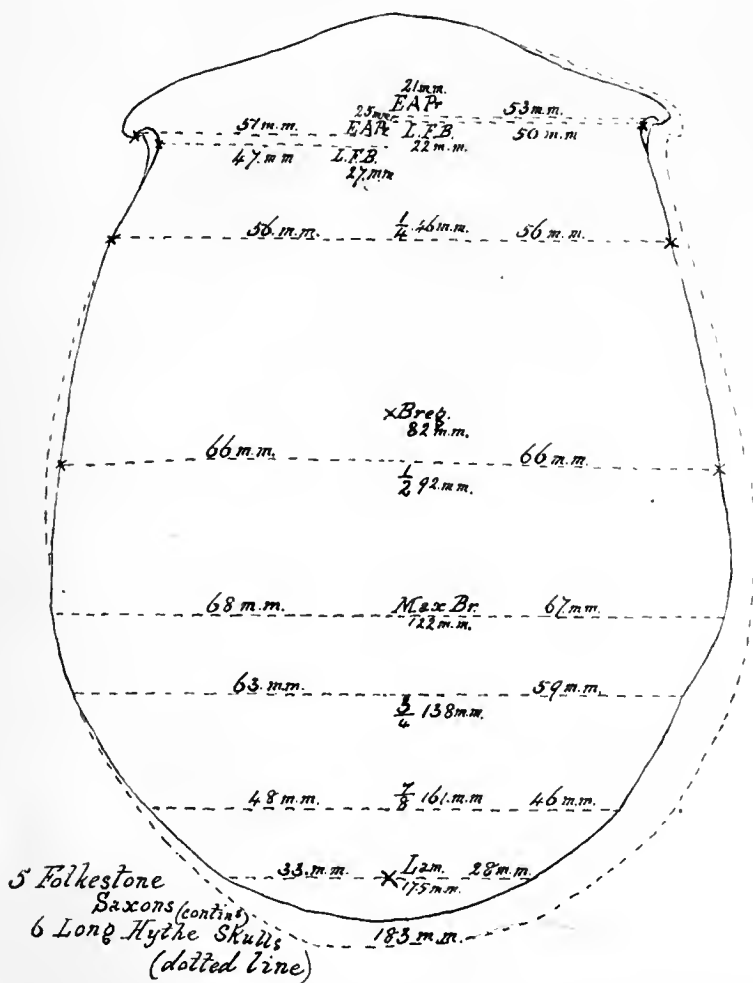


FIG. 5. NORMA VERTICALIS OF FOLKESTONE SAXONS COMPARED WITH MEDIEVAL ENGLISH SKULLS.

asymmetry of both sets of skulls is noticeable, and tends in opposite directions in the two. I have not sufficient material to do more than call attention to this point at present, and I am particularly anxious not to deduce anything hastily from the asymmetry of these Folkestone crania, since some of them show evidences of a good deal of posthumous distortion.

γ. Full Face Contour (*Norma facialis*).

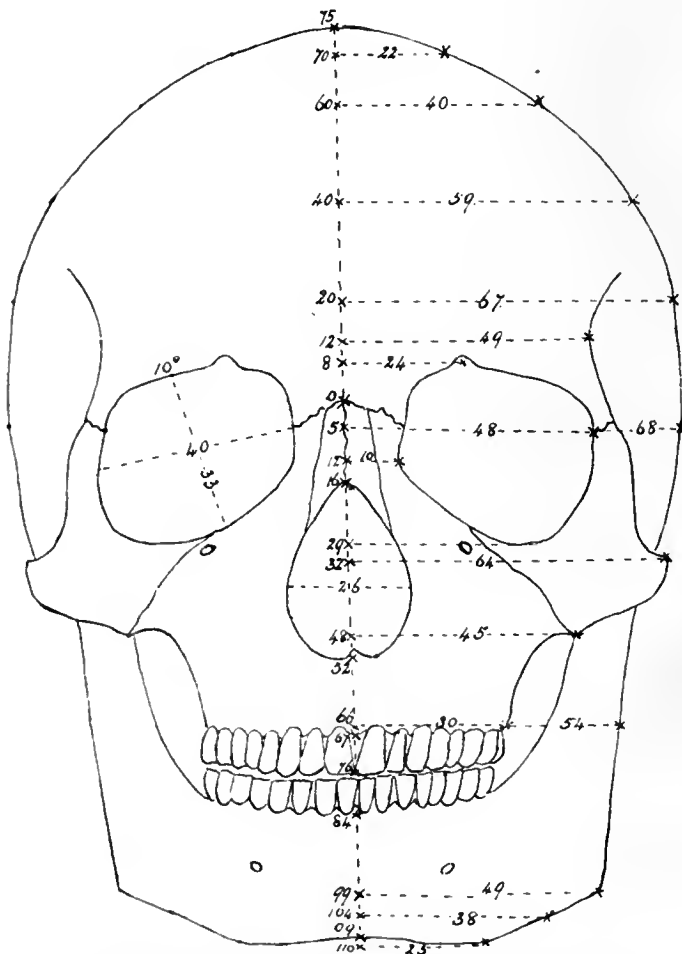
For the study of this I have only the faces of A B and C. B (in the Folkestone Museum) is certainly a female, and so I think are A and C.

In reproducing the face a large number of measurements are necessary, but the dotted lines on the diagram will make them understood. Directions and

technical suggestions for taking these measurements will be found in the *Journal of Anatomy*, vol. xiv, p. 242.

Under ordinary circumstances I take separate measurements of the right and left sides of the face in order to record the asymmetry which is always present. In the present instance I have not done so because skull A has been so deflected to one side by the pressure of the soil that any results founded on its asymmetry would be misleading. That this distortion is posthumous is proved by the fact that the lower jaw, which was wide open when the skull was dug up, is in a line with the forehead and the upper and lower teeth do not fit.

I have therefore taken the measurements right across from one side to the other in these particular skulls and placed half on each side of the middle line (Col. L), thus giving an artificial perfect symmetry.



Average of 3 Saxons from Folkestone all Q.

FIG. 6. RECONSTRUCTION OF AVERAGE OF THREE FEMALE FOLKESTONE SAXONS.

	A.		B.		C.		Average.	
	M.	L.	M.	L.	M.	L.	M.	L.
Supraorbital notch	9	21	6	26	8	24	8	24
Least frontal breadth	16	50	12	47	9	50	12	49
2 c. above nasion	—	67	—	66	—	—	—	67
4 c. „ „	—	58	—	60	—	—	—	59
6 c. „ „	—	40	—	40	—	—	—	40
7 c. „ „	—	24	—	19	—	—	—	22
Vertex	79	—	74	—	73	—	75	—
Exterior angular posterior ...	4	49	6	47	5	49	5	48
Ditto skull breadth	—	66	—	69	—	—	—	68
Least interorbital	12	10	12	12	12	9	12	10
Tip of nasal bone	absent.		18 breadth.	—	13 breadth.	—	—	16 breadth.
Infraorbital margin	24	—	33	—	30	—	29	—
Bizygomatic	27	66	36	64	34	61	32	64
Nasal spine	51	—	54	—	50 absent.	—	52	—
Inframalar	45	46	48	45	51	43	48	45
Maxillary tuberosity	65	29	65	31	67	31	66	30
Ditto mandibular breadth ...	—	54	—	54	—	53	—	54
Upper incisor point	66	—	70	—	66 absent.	—	67	—
Incisor edge	75	—	76	—	76 absent.	—	76	—
Lower incisor point	82	—	83	—	86 absent.	—	84	—
Mandibular angle	99	48	99	46.5	98	53	99	49
Lower chin level	111	25	109	29	111	22	110	25
Midway between two last ...	105	38	103	36	105	40	104	38
Point of chin	109	—	108	—	111	—	109	—
Orbital width	40	—	39	—	41	—	40	—
Orbital height	31	—	35	—	34	—	33	—
Angle of supraorbital margin ...	10°	—	10°	—	10°	—	10°	—
Nasal width	25	—	27	—	25	—	26	—

The figure shows these three faces as a composite diagram, and among their characteristics the most striking, no doubt, is the width of the jaw, particularly in the region of the angle. The width of the nose, too, is, I think, great compared with that of modern English people. Horton Smith found that among mixed Saxons 40 per cent. were playtrhine, 33 per cent. mesorhine and 27 per cent. leptorhine, while among the South Saxons leptorhines predominated, no platyrhines being found. Unfortunately Horton Smith, following the usual custom, expressed his results in indices, and a high nasal index may mean either a very short or a very broad nose.

I believe that the best plan is simply to state the average breadth of the nose and, if this is done, it seems from the small amount of material which I have that these Folkestone Saxons had broad noses. This, as far as I have seen, is by no means constant in Saxons from Kent.

Another point of interest which these Folkestone skulls share with all the other Saxon skulls I have yet measured is that the upper margin of the orbit is more nearly horizontal than in most modern skulls. In these it only slopes 10° from the horizontal when taken from the supraorbital notch, while in many skulls in my dissecting rooms it is more than 20° . This slope of the orbit makes a good deal of difference to the general appearance of the skull, and, I think, is worth noting carefully, as it may turn out of racial importance.

The horizontal supraorbital margin is very noticeable in Fig. 7, which is a photograph of skull A, though I quite admit that photographs, however carefully the skull is orientated, are apt to be misleading. The forehead breadth of these three skulls is probably greater than that of the average female, because two of them were metopic, a condition which is usually associated with increased forehead breadth. It will be noticed on referring to the table of the *norma verticalis* of five skulls on p. 115 that the forehead breadth is 97 mm. instead of 98 mm. as in A, B and C, and that in spite of skull E being certainly male. There are four other loose frontal bones in the collection the average breadth of which is 93 mm., thus bringing the average for nine foreheads to 95 mm.



FIG. 7. PHOTOGRAPH OF FEMALE SAXON
NORMA FACIALIS.

δ. *The Palate.*

The measurements which seem to me really necessary in order to enable us to reproduce the shape of the palate with any approach to accuracy are :—

1. The sagittal length from the posterior margins of the central incisors to the tip of the posterior nasal spine.
2. The length of the posterior nasal spine.
- 3, 4 and 5. The breadth between the inner alveolar margins of the canine 2nd premolar and 2nd molar teeth. Unfortunately, I have only recently realised how many measurements are really necessary, and so they have only been taken in skulls A and C. In the Folkestone Museum skull (B) I only took the length and the distance between the second molars, but this, of course, gives us no clue to the shape of the alveolar arcade.

The measurements are as follows :—

	A.	B.	C.	Average of A and C.
Sagittal length to tip of spine.	53	43	50	52
Length of spine	5	—	5	5
Breadth canine	23	—	28	26
„ second premolar	33	—	37	35
„ „ molar	38	37	43	41

I was struck by the height of the palate in all three skulls, though I have not thought of a means of expressing this by numbers which would be convertible into a diagram. No marked torus palatinus was noticed and the teeth, like those of all Anglo-Saxons, were very perfect, though worn to such an extent in the older skulls that a rampart of enamel surrounds a concave crown. Skull C was so young that the teeth were little worn.

ε. *The Lower Jaw.*

Fifteen adult specimens are available, of which ten have both sides perfect. There are also some jaws of children; I cannot pretend to distinguish the sexes except in those three cases in which the jaws accompanied the skull; these are all female (A, B, C).

The usual measurements are given in the following table :—

	1 (A).	2 (B).	3 (C).	4.	5.	6.	7.	8.	9.	10.	Average.
Bicondylar ...	119	118	119 ?	121 ?	122 ?	—	112 ?	—	—	—	120
Biangular ...	96	93	106	105	98 ?	92 ?	104	118	110	114	104
Bimental ...	46	45	—	47	46	47	47	47	48	47	47
Symphysial depth...	28	27	28	31	30	33	29	30 ?	32	34	30

In six of these ten bones I noticed that the angle was distinctly everted. These measurements are not enough to enable me to produce a diagram of an average jaw from the side, nor can I draw one from the front without some data for orientating the bone, which can only be obtained when the whole skull is present as in A, B and C. To obtain a graphic mean of these jaws as seen from the side I have had to take the following additional measurements, the explanation of which will be evident upon comparing them with Fig. 8.

No. of jaw.	AB.	AK.	AC.	AF.	DE.	HG.	GJ.	FC.	Angle.
1 (skull A)	68	61	79	74	42	35	26	29	118
2 (skull B)	59	—	70	64	45	32	28	26	118
3 (skull C)	62	60	60	54	36	26	26	? 30	110
4	66	—	71	63	? 30	27	27	30	119
5	? 58	—	73	65	35	28	30	32	122
6	—	—	83	77	? 42	36	29	32	110
7	56	65	74	65	40	35	25	30	118
8	? 58	60	74	66	42	36	—	31	112
9	60	62	69	65	39	29	22	30	120
10	—	75	83	79	? 37	40	26	34	110
11	68	68	78	72	40	37	30	33	113
12	68	60	70	65	38	32	30	32	115
13	? 62	65	77	? 73	38	36	30	32	116
14	55	53	67	63	35	29	21	24	120
15	67	62	73	62	35	32	27	32	110
Average ...	62	63	73	67	38	33	25	30	115

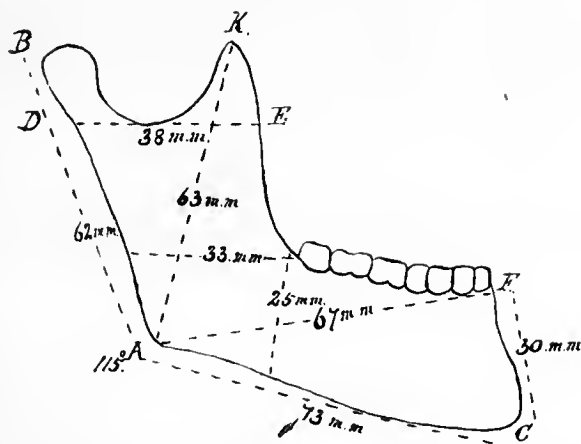


FIG. 8. RECONSTRUCTION OF FIFTEEN LOWER JAWS OF FOLKESTONE SAXONS.

The above measurements may be taken with callipers or by the projection method, with the exception of AF and AC. These must be taken by projecting the jaw on to a flat surface on account of the way in which the body of the jaw slopes inward toward the chin. I find that by attempting to measure these with the callipers a distortion of nearly 2 cm. is produced.

The above diagram is not nearly as valuable as it would have been if the jaws had been sexed, but this I cannot do. I fancy that much laborious work would be necessary before anyone can attempt it with passable accuracy.

I have as yet no similar diagrams of average jaws of other races with which to compare this, but the points which strike me most are: 1. The antero-posterior breadth of the ramus for the strong masseter muscle. 2. The depth and strength of the body of the jaw supporting the strong, ground down teeth; and 3. That the coronoid process is not specially prominent—indeed in many of the jaws it was quite small. There is no evidence that these Saxons had strong temporal muscles, but their masseters must have been very powerful and, no doubt, exerted a great influence in producing the everted angles and marked biangular breadth which is one of the chief points in the Saxon physiognomy.

Clavicles.

The six measurable specimens of these bones, belonging I believe to six separate individuals, are all in a damaged condition. They are markedly slight and straight when compared with the clavicles taken from modern dissecting room and post-mortem room specimens, and endorse the evidence of the other bones that these people were of a lithe and graceful build rather than massive and very muscular.

The following are their lengths, as nearly as I can reconstruct them, though

I have not measured any which I did not feel sure of within a few millimetres : (1) ♂ 172 mm.; (2) ♀ 140 mm.; (3) 147 mm.; (4) 157 mm.; (5) 148 mm.; (6) (Folkestone Museum ♀) 145 mm.

Scapulæ.

All the scapulæ were so fragmentary as to be useless for measuring.

Humeri.

The following table gives the measurements I was able to take. I have compared the bones very carefully and rejected any which seemed the fellow of one on the opposite side whose measurements are recorded. There is every probability therefore that these 19 series of measurements represent 19 different individuals.

The sexing has been carried out by taking 42 mm. as the dividing line between the sexes in the transverse axis of the head of the humerus (see T. Dwight, "Size of the articular surfaces of the long bones as characteristic of sex," *American Journal of Anatomy*, vol. iv, No. 1, p. 19). Where this criterion is impossible the sex has been guessed at by considering the other available measurements and by the general appearance of the bone.

No.	Side.	Sex.	Tr. axis of head.	Length.	Least diam. of shaft.	Trochlear breadth behind.	Angle of rotation.
1	L.	♂	44	336	20	28	21°
2	L.	♂	45	—	—	—	—
3	R.	♂	42	326	19	24	28°
4	R.	♂	42	330	19	23	14°
5	L.	♂ ?	—	—	20	24	—
6	R.	♂ ?	—	—	21	25 ?	—
7	R.	♂ ?	—	—	19	24	—
8	R.	♂ ?	—	—	—	24	—
9	R.	♂ ?	—	—	19	23	—
♂	...	Average.	43	331	20	24	21°
Average of 11 modern ♂ humeri.			44	329	22	24	21°

No.	Side.	Sex.	Tr. axis of head.	Length.	Least diam. of shaft.	Trochlear breadth behind.	Angle of rotation.
10	L.	♀	38	307	18	23	30°
11	L.	♀	—	305	—	—	—
12	R.	♀	40	—	18	—	—
13	R.	♀	41	—	—	—	—
14	R.	♀ ?	39	305	13	—	—
15	L.	♀ ?	—	—	14	19	—
16	L.	♀ ?	—	315 ?	14	20	—
17	L.	♀ ?	—	—	—	20	—
18	L.	♀ ?	—	—	18	—	—
19	R.	♀ ?	—	331 ?	16	20	—
♀	...	Average.	39	313	16	20	30°
Average of 4 modern ♀ humeri.			39	314	18	21	18

Dwight gives 38·9 as the average transverse diameter of the head of the female humerus, but from this ·5 to 1 mm. has to be subtracted for the cartilage. His average for the male is 44·6 mm. In his paper he quotes Hrdlicka as having measured the lengths of the humeri of 100 white males and 100 white females in New York with the result that the male average was 324 mm. and the female 299.

From the eight individuals in which the length is measurable there is no evidence to make us think that the humerus of these Folkestone Saxons differed appreciably in length from that of our own present-day working classes, while they both have an appreciably longer humerus than have the individuals who find their way into the New York dissecting rooms.

The least transverse breadth of the shaft is, I think, a useful measurement to take as an indication of physique. It will be noticed that in both sexes the modern bones are stouter than those of the Saxons. In taking this measurement I have been very careful to allow for any appearance of erosion of the bones through their long stay in the ground. Anyone interested in the matter will no doubt check my results with the actual bones, which are in the R.C.S. Museum.

The stature of these Saxons, as deduced by K. Pearson's tables from the length of the humerus (*Phil. Trans.*, Ser. A, vol. 192, p. 169), tallies very closely with that obtained from the femur, when it is remembered that the bones were not in all cases those of the same individuals. It gives the males a height of 5 feet 5¼ inches and the females 5 feet 3 inches.

Forearm Bones.

Parts of some fifteen to twenty radii and ulnæ are present, but there is only one whole radius apart from that in the Folkestone Museum. Their appearance is quite in harmony with that of the other bones, except that from their delicate nature they have suffered more from erosion. I do not feel justified in deducing anything from their measurements.

Femora.

(a) *Femur length.*—I have only been able to sort out five male femora the lengths of which were determinable.

Four of these belonged to the right side and one to the left, but I feel sure after careful examination that the left one was not the fellow of any of the four right.

The average length of these bones was 461 mm., which according to Pearson's tables gives an average height for the male Saxons of 168 cm. or 5 feet $6\frac{1}{2}$ inches. Six female femora were available: three right, two left and the mean between the right and left of the Folkestone Museum specimen. None of these I am sure belonged to opposite sides of the same individual.

Their average length was 436 mm., which gives an average height for the Folkestone Saxon women of 163 cm., or 5 feet $4\frac{1}{8}$ inches. As far as I can find out the only other measurements of Saxon femora recorded are those of Horton Smith at Cambridge, who records the measurements of three belonging to male South Saxons. He does not say to which side they belonged, so that there is the possibility of the two latter belonging to the same individual.

Their lengths were respectively 429, 447, and 449 mm. This gives a mean of 442 mm., corresponding, according to Pearson, to 165 cm. of stature or 5 feet 5 inches.

The actual body lengths recorded by Mr. Nichols of twelve of the Folkestone skeletons which I believe were male and of ten which I believe were female, give us an average of 5 feet 5 inches for the males and 5 feet 2 inches for the females. These are probably somewhat under-estimated, because there was no possibility of straightening out the skeleton properly nor has any allowance been made for the missing soft parts.

Although the number of femora is small to generalise on the height of a race, when we take them in conjunction with the humeri and tibiæ, many of which doubtless came from other bodies, we have a considerable mass of evidence that the male Saxons in Kent and Sussex were on an average about 5 feet 6 inches high and the females about 5 feet $3\frac{1}{2}$ inches.

It is possible that two of the skeletons (those from graves 10 and 25) may just have reached 6 feet, but all the evidence at our disposal shows that these Saxons were not of the gigantic stature which the old writers lead us to believe. The men, indeed, were not up to the average of upper middle class Englishmen of the present day, which my own measurements of St. Thomas's Hospital students

places at 5 feet 9 inches, though I believe Professor K. Pearson gives middle class Englishmen an inch more.

We should describe these Saxons nowadays as people of medium height, though there was not as great a difference between the heights of the two sexes as there is to-day judging from my measurements of London female medical students.

Twenty-one male femora, all from different bodies dissected in St. Thomas's Hospital, give an average length of 455 mm., which means an average stature of 5 feet 5 $\frac{3}{4}$ inches for the labouring classes, or something very near the average of the Saxon men. I only mention these because as their lengths are about the same as those of the Saxons they will be useful for comparison in other ways. I wish their number was greater, but they are all I have at present.

TABLE CONTRASTING THE AVERAGE MEASUREMENTS OF SAXON FEMORA WITH THOSE TAKEN FROM THE DISSECTING ROOM.

	Saxon males.		Modern males.		Saxon females.	
	R.	L.	R.	L.	R.	L.
Length	(5) 46·1	(5) 46·1	(10) 45·8	(11) 45·3	(6) 43·6	(6) 43·6
Least transverse diameter of shaft.	(8) 28	(10) 28	(10) 28	(11) 28	(6) 25	(7) 25
Diameter of head ...	(8) 47	(9) 48	(10) 49	(11) 49	(4) 40	(9) 41
Angle of torsion	(3) 18°	(3) 18°	(10) 18·5°	(11) 17°	(3) 16°	(3) 16°
Platymeria antero-posterior.	(8) 26	(4) 26	(10) 29	(11) 29	(5) 24	(7) 26
Transverse	(8) 33	(4) 33	(10) 36	(11) 33	(5) 31	(7) 32
Index	(8) 79	(4) 79	(10) 80	(11) 88	(5) 77	(7) 81

In this table the numbers in brackets show the number of specimens on which the average is founded. I have not ventured to include any modern female English femora, since the number I have been able to measure is so small.

It will be seen that while the Saxon femora are slightly longer than those of modern lower class English people, they are of the same calibre and the diameter of the heads is less. To the eye of the anatomist they are cleaner, straighter and more graceful, and I found no pilastered or bowed bones among them. They suggest that their possessors were not heavily built people but rather light and active.

The platymeria or flattening of the shaft just below the lesser trochanter is very evident to the eye in many of them, though this, as is so often the case, is not fairly represented in the indices. The actual antero-posterior measurements show that the Saxon bones are 3 mm. less than the modern English, though the transverse diameter is not correspondingly increased.

Platymeria is usually regarded as the physiological effect of the constant use of the vasti and crureus muscles in hill climbing, and may well have been produced by the Saxons hunting and fighting on the rolling downs. Horton Smith also notices that two of his three South Saxon femora were platymeric.

It would be interesting to know whether Saxon femora from the flatter parts of the country are platymeric too.

Tibiae.

The following table contains measurements of twenty tibiae, no two of which belonged to the same body. I am unable to distinguish the sex of tibiae with any certainty, nor do I know that any work has been done in this direction as it has in the case of the humerus and femur. It is probable, however, that the best clue to the distinction of sex will lie in the size of the articular ends, and so I have arranged these tibiae as far as possible in the order of the breadth of their heads. From what I do know of tibial head breadth, I fancy that males predominate in this series.

No. of tibia.	Head breadth.	Tibial length.	Platynemia.		Angle of torsion.	Side.
			Tr.	Antero-posterior.		
1	77	—	25	38	—	L.
2	76	371	30	40	40	R.
3	75	379	22	36	25	R.
4	74	—	22	37	—	L.
5	73	—	26	31	—	R.
6	71	374	25	32	45	L.
7	70	360	24	30	39	L.
8	70	—	22	32	—	L.
9	66	—	21	32	—	R.
10	64	—	—	—	—	R.
11	63	—	21	27	—	L.
12	63	—	21	28	—	L.
13	63	—	21	29	—	L.
14	62	—	25	32	—	R.
15	—	—	28	35	—	L.
16	—	—	26	34	—	R.
17	—	—	26	32	—	L.
18 (body C)	—	358	22	32	—	L.
19 (body B)	—	375	—	—	—	L.
20	—	—	20	31	—	R.
Average	70	369	24	33	37	—
Average of 18 modern tibiae ...	75	366	25	35	18	—

The question of platynemia is an interesting one, since it so often accompanies platymeria. The platynemic index is 73 against 71 in 18 modern bones. This is no great difference, but in spite of it two or three of the Saxon tibiæ, notably Nos. 3 and 4, are distinctly platynemic. The table of measurements is, I think, very instructive in the contrast between the breadth of the head of the tibia in these Saxons and modern English (?) people. It will be noticed that although the Saxon tibia is slightly longer (3 mm.) than the modern, yet the head breadth is 5 mm. less. It is this compression of the bony ends which contributes so much to the graceful appearance of the Saxon bones.

The average length of six specimens is 369 mm. This, according to K. Pearson, gives an average stature of 166 cm. or 5 feet $5\frac{3}{8}$ inches. The measurable bones looked like those of males for the most part, so that the stature derived from the tibia, considering the small amount of material, agrees very closely with that derived from the femur and humerus.

The angle of torsion, as shown in the four specimens in which I was able to measure it, is distinctly high. Mikuliez gives 5° to 20° as the average range, while my 18 modern tibiæ averaged 18° . These four Saxon tibiæ average 37° and are all over 20° . In connection with this the note on the astragalus is interesting. One or two of the Saxon tibiæ have slightly retroverted heads, but the deviation is only just noticeable.

The remains of the fibulæ were so fragmentary that I could draw no deductions from them.

Astragali.

There are only five of these bones, which do not in my opinion represent opposite sides of the same individual. The only one I can sex is No. 5, which belongs to the skeleton in the Folkestone Museum; this I feel sure is female.

The astragalar index is gained by taking the angle which the line of the outer border of the neck makes with the plane of the internal articular surface. This gives the following results: No. 1 (L.) 17° , No. 2 (R.) 15° , No. 3 (L.) 15° , No. 4 (L.) 16° , No. 5 (L.) 20° . The average of the five is 17° . Duckworth (*Anthropology and Morphology*—Cambridge) gives 10° as the average of six modern astragali, and this is about the average of ten modern bones in my possession. It therefore seems that the Saxon astragalus had a more inwardly directed head than that of the modern Englishman, and this one is not surprised to find when the increased outward rotation of the lower end of the tibia is remembered.

Calcanea.

The following are the greatest lengths and least breadths of these bones:—

	Lengths.	Breadths.		Lengths.	Breadths.
1. (L.)	77 mm.	27 mm.	7. (L.)	84 mm.	—
2. (L.)	86 "	26 "	8. (R.)	72 "	25 mm.
3. (R.)	78 "	27 "	9. (L.)	74 "	27 "
4. (R.)	81 "	29 "	10. (L.)	78 "	28 "
5. (R.)	85 "	31 "	11. (R.)	78 "	26 "
6. (L.)	79 "	30 "			

CONCLUSIONS.

The present contribution is a small and imperfect one, but, apart from the skulls and a few thigh bones, it is, I believe, all the actual knowledge we have of the stature and physique of any of the Saxon peoples.

It is on this account very necessary not to overrate its importance, but to bear in mind that what seems true for these Folkestone people need not be true for Saxons in other parts of England.

The following conclusions seem to me legitimate:—

1. That this burial-ground was used in pre-Christian times by those Saxons who lived near the southern part of the Kentish coast during the sixth century. There is some evidence that another exists at Hythe, five miles to the south (of course quite distinct from the bones in the church there), while those to the north lie on the downs between Canterbury and Dover.

I should think it probable that this cemetery served some thirty square miles of country.

2. The burials are of the "grave row" type, such as those recorded from the neighbourhood of Breneu.

3. The arms, ornaments and orientation of the bodies, and especially the characteristic earthen flask, show that these people had the same burial customs as those found in the other Kentish burial-grounds and were therefore, presumably, Jutes.

4. The female skulls and bones showed no points of difference from those of the males except in the normal sexual signs. This seems to me an important point to notice when larger series come under observation, because how far the Saxons intermarried with the conquered British is a delicate and hitherto quite unsettled point.

5. I cannot at present say whether these Jutes or Kentish Saxons have any craniological characteristics distinguishing them from Saxons found elsewhere in England, but I am gradually accumulating evidence on this.



FIG. 1.—FEMALE SAXON SKELETON.



FIG. 2.—MALE SAXON SKELETON.



FIG. 3.—FEMALE SAXON SKELETON
SHOWING SIDE VIEW OF SKULL.
SOME SAXON BONES FROM FOLKESTONE.



FIG. 4.—A DOUBLE BURIAL.



FIG. 1.—GENERAL VIEW OF BURIAL GROUND SHOWING METHOD OF INTERMENT.



FIG. 2.—SKELETON BURIED WITH THE LEGS FLEXED.



FIG. 3.—ARMS AND ORNAMENTS FOUND AT FOLKESTONE AND NOW IN THE FOLKESTONE MUSEUM.

SOME SAXON BONES FROM FOLKESTONE.

6. These people had long, fairly high and narrow heads, their foreheads were well shaped, not receding, and probably rendered more effective-looking by the marked frontal eminence in both sexes and the rareness of prominent supraciliary eminences in the males. Their jaws were strong and wide at the angles with sound, strong, deeply-ground down teeth. Their noses were rather broad, though I can learn little of their shape from this particular collection.

7. They were a lithe, singularly well built though somewhat slender race, often showing traces of the platymeria and platynemia, characteristic of agility; of medium height (about 5 feet 6 inches for the men and 5 feet 4 inches for the women), while the women approached the men in stature and physique more closely than is the case in modern skeletons.

8. With the exception of one case of osteo-arthritis in the head of a femur no traces of disease were noticed in the bones.

REPORT ON THE ETHNOLOGY OF THE OKANÁK-ĒN OF BRITISH COLUMBIA, AN INTERIOR DIVISION OF THE SALISH STOCK.

BY CHARLES HILL TOUT, F.A.E.S., Local Correspondent of the Royal Anthropological Institute.

THE following notes are the result in part of my investigations among the Okanák-ēn.

I desire again to acknowledge my indebtedness to the Government Grant Committee of the Royal Society for a special grant of £40 towards the expenses of my work.

The Okanák-ēn are the easternmost division of the Salish of British Columbia. They are not confined to this province but extend southwards into the states of the American Union, the International Boundary dividing them into two fairly equal divisions. Their main settlements in British Columbia were in the valleys of the Okanagan and Similkameen, and on the borders of the Arrow Lakes. My own observations are confined to the Okanák-ēn proper, extending from the Enderby Reserve on the north to Osooyos on the south, near the boundary line, a distance of about 150 miles. These tribes formerly occupied, according to my informants, ten permanent villages or settlements, the native names of which, running from north to south, are as follows :—

1. Spālem'teīn = Flat rim or edge (of river), *cf.*, 'uk'Emteīn; rim or edge.
2. 'nkemápaluks = Head of the lake.
3. Sinklōhōtem = Massacred, having reference to an incident in their history when some of their enemies attacked this settlement without warning, and slaughtered great numbers of them.
4. Kelaína ... = Grizzly bear.
5. S'tekâtkwtlníwet = Has reference to a solitary lake.
6. 'Nhāk-wácten = Refers to a stone for smoothing and straightening their arrows.
7. Pentnikten = Meaning unknown.
8. Cwoqenétq = Little Fall.
9. 'nk'amép ... = End of Lake.
10. S'ōiyūs ... = Narrows.

Besides these main settlements they had a number of fishing, berry, and root camps which they occupied temporarily during certain seasons of the year.

A common language is spoken throughout the whole area occupied by these tribes, which shows greater or less dialectical variation as the tribes are near or remote from each other, or border on other linguistic divisions. It occupies a position intermediate between that of the Thompson, the chief peculiarities of which are now fairly well known, and that of the Salish proper, as recorded by Father Mengarini in his *Grammatica Linguae Selicæ*.

The fulness of detail with which Father Mengarini has treated this tongue and its close relationship to the Okanák'ën dialect make it unnecessary for me to give here more than an outline of the grammatical structure of the latter.

Fifty years of more or less close contact with the whites has greatly modified the lives and conditions of the Okanák'ën. As in other centres they have much decreased in numbers. They now live on Reserves, some of the finest tracts of country having been set aside for their use. I cannot say that they have taken much advantage of their opportunities. With rare exceptions here and there, and generally where the infusion of white blood makes itself apparent, they are content to muddle along in their old hand-to-mouth style of living. They display little or no concerted action in their labours. Each family is satisfied to cultivate a small patch of vegetables or grain for itself, whereas if they showed any energy or enterprise they might all be wealthy, or at any rate well-to-do, in a few years. Certainly no Indians in the province have better opportunities or more valuable lands either for agricultural or stock-raising purposes.

Regarding their past a careful inquiry at various centres reveals the fact that their culture followed so closely that of the neighbouring divisions, that a description of one is virtually a description of another. Teit's account of Thompson culture might have been written, with a few minor and unimportant points of difference, for the Okanák'ën.

Their marriage, naming, birth, burial, and puberty customs are practically identical. In respect to names I was informed more than once that children's names were generally taken from, or had reference to, their father's Scómeq, that is, his personal *snam* or *sulia*; that each child at puberty went alone into the mountains or to some other secluded place to seek for its Scómeq. This is in keeping with what we know of the other interior Salish. The term used among the Okanák'ën for this period of seclusion was steú'entut. Their belief in the importance of the steú'entut is well brought out by a story which used to be told to children who were reluctant to enter upon their steú'entut, or puberty course.

It is related that once, a long time ago, a certain man had four children. When they were young he trained them in four different ways. The first he sent into the mountains to undergo the steú'entut; the second had to take a course of sweat-baths; the third a course of swimming, and the fourth was to remain at home and do nothing.

The last child barely lived to reach manhood. The third one lived to be middle-aged, the second to be an elderly man, but the youth who had gone through his steú'entut lived to be very old and was always well and hearty.

To this day the old people firmly believe that the excessive mortality among them is mainly due to the decadence and non-observance of the customs and practices of their fathers, and more particularly that of the steíentcut.

The Okanák'ēn observed first-fruits ceremonies. When the first berries or roots were ripe the chief would send out his wife or eldest daughter to gather a portion. The whole community would then come together, and prayers would be offered to those spirits of the sky who were supposed to preside over the operations of nature, portions of the fruit or roots would be distributed to all present, after which anyone was free to gather all he or she desired; but no one would think of picking a berry or digging a root until after the feast had been held.

I could gather no clear ideas as to the character of these powers to whom their prayers were addressed. According to the old men they were not the sun nor the sky, but the beings who looked after the berries or the roots. But it is evident they were supposed to live in the sky, for the chief always held his hands aloft, as among the other tribes, and addressed his prayers and cast his eyes skyward.

The details of these first-fruit ceremonies closely resembled those held by the Thompsons, accounts of which have been given by Teit and myself before.

The dress and dwellings of the Okanák'ēn closely resembled those of the Thompsons, except that in some centres they used a log hut built partly under and partly above ground during the winter months, instead of the regular "keekwilee-house."

In utensils birch bark figured more conspicuously among them than among the Thompsons. Indeed they state their woven baskets and other receptacles came by way of barter from the Thompsons.

The cottonwood tree figures largely in their habitat, and this wood was extensively used in domestic ways by them. Their canoes were generally cottonwood dug-outs.

In their Teiptcaptíkw'tl or mythological time we find Coyote is the most conspicuous figure. He takes the place apparently of the "Old Man" and "Benign Face" among the Thompsons and the Qals among the Halkómélem tribes of the delta and coast. It was he who gave the Okanák'ēns the salmon, of which they distinguish at least three species, the 'nētētyuq or spring-salmon, the s'swēn or "sockeye," and the kécō or "dog-salmon." He is not, however, the benignant and dignified character that reveals itself in the actions of "Benign Face" of the Lower Thompsons, or the Qals of the Halkómélem. He is more often the Trickster and Braggart. And from the fact that he figures so little or not at all in the myths of the coast Salish, and so largely in those of the other stocks of the interior, it would seem to suggest that he is a borrowed and adopted character among the interior Salish, and not a native product of the mythology of the stock.

And this leads me to the point where I may with propriety offer a few remarks upon the origin or source of the Salish of British Columbia in so far as my studies of this stock bear upon that question.

That the stock is not native to the province but has come into it from some outside source has in the course of our studies become abundantly clear. Further, certain features of their culture, and certain facts of their language, make it quite certain that wherever else their original or early home was it was not on the rivers and waters of the North Pacific Slope.

In the first place our studies of their social organisation has revealed an increasing simplicity of form, as we proceed from the coast inward. Now, as the coast stocks all possess, and appear to have possessed for at least a considerable period of time, unusually complex and peculiar social systems, and as the social systems of the coast Salish show they have been much influenced and modified by contact with these systems, had the course of the stock been from the coast to the interior we should have expected to find everywhere some evidence of this earlier contact with, and points of resemblance to, the social culture of the littoral tribes. But we do not. On the contrary we find a well-defined and graduated decrease in complexity in social organisation as we proceed from the coast inwards, showing that the influence of the coast tribes, though spreading inwards at the time we first came into contact with the natives, had not yet reached to, or influenced the lives of, the interior tribes. I have taken occasion to remark more fully on this in earlier papers.

From this fact alone we could draw the safe conclusion that the migrations of the Salish have not been from the coasts of British Columbia, but from the interior to the sea. But from linguistic evidence we find the movement has not been uniformly from east to west, but rather from south to north, or more correctly from south-east to north-west. In my last report on the south-eastern tribes of Vancouver Island I pointed out that the language of these tribes related them to the cognate tribes of Washington. The intrusion of the Sk'qómic into the area of the Halkómélem tribes, and the close linguistic affinities of their tongue with that of the tribes south of the International Boundary, make it quite clear to my mind that the Sk'qómic came into British Columbia from the south. The same may be said of the Tcíl'qéuk, who are known to have formerly spoken a dialect of the Washington Salish. Again, the evidence of the Okaná'k'én tribes points to the same conclusion. Whether the original home of the stock was east or west of the Rockies is a question not yet established. My own linguistic studies of this stock, however, lead me to the conclusion that it was west of this great dividing line; that it came into the American continent by way of the Pacific; and that it has closer linguistic affinities with the Oceanic peoples than with any of the characteristic American stocks east of the Rockies. At what point it entered the continent is not at present clear, except that it would appear to have been south of the area where the salmon forms the staple food supply for the littoral tribes.

The conclusion has been drawn that the Aryan races formerly occupied a common home and possessed a common culture because we find certain linguistic roots common to them all, amongst which are those denoting the possession and use of grain and milch cattle. We conclude from this that they were cultivators of

the soil and breeders of stock. Applying the same class of evidence to the Salish we are forced to the conclusion that the earlier, undivided stock did not live on the tidal waters of that part of the Pacific slope where the salmon is a conspicuous product. It was the staple of the larder of all the coast and Delta tribes, at the time we first came into contact with them, and would naturally have been the same in former times if they had dwelt where it was so easily obtained, and consequently the term or terms by which this conspicuous food item was distinguished from others would be well and intimately known to the whole horde or division, and would have continued in use down to our time with such dialectical differences of form and sound as we find have taken place in such of their numerals as they held in common before the separation of the stock into its present linguistic divisions. We have no difficulty in detecting the identity of the numeral ten, for example, in any of the linguistic divisions of this stock, with one or two notable and accountable exceptions, and if the salmon had held, before their division into their present groupings, the same place in their dietary as it did when we first came among them, we should have less difficulty in detecting the identity of the terms for salmon than we have for the numeral ten. But such is not the case. Almost every linguistic division has distinct and unrelated terms for the salmon which no method of linguistic equation can show to be the same or to have had a common origin.

It seems clear, then, that wherever else the early home of the Salish was, it was not within the salmon-bearing area or where this fish was known to them as food. For to be known was to be eaten. This evidence is further supported by their myths of the origin of the salmon, no two of which are alike. The very possession of a myth of salmon origin shows that they believe that once they lacked this article of their diet.

Some years ago I pointed out, in a paper printed by the Royal Society of Canada, that the Salish language showed a most remarkable resemblance both lexically and morphologically to the Oceanic tongues. Further and closer study of these languages has confirmed me in the belief that an underlying unity exists between them. Doctor Codrington has pointed out in his *Melanesian Languages* that the Oceanic tongues are homogeneous, that Melanesian, Polynesian, and Malay have a common origin, and form a linguistic group or family of their own. If his contention be sound then a fourth must be added to this family, for the Salish language as a whole shows almost as much resemblance to any one of these three Oceanic stocks as they do to each other. Comparing the Salish language with such characteristic American tongues as the Algonquin or Dené the affinities between these are infinitely less and more remote than those between Salish and the Oceanic tongues; and even if these resemblances should be shown to be fortuitous, and without real foundation, they are so remarkable that the classification of the Salish tongue would still be rather "Oceanic" than "American." But I am not alone in thinking that Salish and some other Western American stocks are akin to the Oceanic. Some of the most distinguished Polynesian scholars hold the same view.

But this is not the time or occasion to set forth the evidence for this claim. I content myself here with merely indicating a probable source and origin for the stock we are considering, among whom I have been working for the last eighteen years.

Mythology.

The mythology of the Okanák'ēn seems to be as full and varied as that of the Thompsons, and we sometimes get the most naive and invaluable glimpses of the mind of the native as it was before contact with white influence. The following myth brings out unconsciously, but none the less clearly, the native ideas concerning the relation between a man and his personal totem or snam, and the help and assistance the man expected and received from it.

The Snow Dance of Coyote.

Coyote and his three sons once found themselves at the foot of a big mountain. They determined to stay there awhile. Said the eldest son to his father, "I must go to the sweat-house, and prepare myself to make a snow dance." So he went. When he had completed his sweat course he built a house apart by itself, to perform his dance in. When all was ready he went there one night and began his snow dance. Now on the mountain at whose foot they were camped dwelt all the Animal People under the leadership of Reindeer, and when they heard the dancer singing his snow dance song, the chief said to his people, "Who will go down to this man, who sings at the bottom of the mountain?" Responded Blue Jay, "I will go down and visit him." So he went, and sat upon the roof of the dancing house. Presently he stroked the back of the man's head, and then returned to the mountain-top, and reported to his chief. Said he, "This man knows nothing; he has no power. He never saw me come in, nor felt me touch his head. He is a sham." Now when the Blue Jay stroked the young man's head, he fell down dead. The morning following, Coyote went over to his son's dancing house, and found him lying dead. He straightway buried him, saying nothing to his other sons about their brother's death. A little while after, the second son said to his father, "I must go and take a sweat-bath course, and prepare myself for the snow-song dance." This he did and met with the same fate as his brother. Coyote buried him also. It was now the youngest brother's turn. He followed in his brothers' footsteps, and met the same fate. All three of the youths were killed by Blue Jay in the same manner. Now, when Coyote had buried his three sons he learnt from his Scómeq or personal totem what had happened to his sons, and why they had been overcome by Blue Jay. Said he, "You must be more careful than they. Prepare yourself for the snow dance by taking a sweat-bath course for three successive days, and when once you begin the snow dance you must not stop till all the animals with their chief Reindeer have come down from the mountain, and entered the dance-house. Reindeer will not enter until towards morning, and you must be careful not to stop dancing till he is quite inside. Then place your dancing-stick at the door. If you do this you will have everyone in the house in

your power." So Coyote prepared himself for the dance by taking a three days' sweat course. When it was over he went to the dance-house and began to sing and dance. He started early in the evening with great force and vigour. Soon Reindeer heard him singing and inquired amongst his people who had told this man how to sing the snow dance. Now this dance had the power to draw all the animals on the mountain to the house of the dancer when properly performed. Said they, "We don't know." Then said the chief, "Who will go and visit this man?" Blue Jay got up and said, "I will go and visit him." Now when Blue Jay uttered these words Coyote said to himself, "Blue Jay is coming to test me." Thereupon said Blue Jay to the chief, "This man is different from the others. He is a great man. He knows I am coming." When Blue Jay arrived at the dancing-house he lit on a rafter to watch for an opportunity to do the same to Coyote as he had done to his three sons. But Coyote continued his singing and dancing without break and lifting his dancing-stick struck Blue Jay on the breast with it. Blue Jay fell down, and lay as dead for a while. Presently he recovered, and made his way back to the mountain-top, and reported what had happened to the chief. Said he, "That man is very powerful; he struck me with his dancing-pole, and I lay as dead for some time." The chief then reproached his people, saying, "Some of you must have revealed our secrets to this man, and taught him this powerful dance-song." But they all denied it. Then Lynx said to the chief, "I will go down and see this man." As he said these words, Coyote said to himself, "Lynx is coming to see me." Thereupon Lynx descended the mountain, and climbed upon the rafters of the dance-house. Coyote was prepared for him, and struck him on the head with his dancing-rod, so that he, too, fell down as dead. For a while he lay thus, then, recovering, made his way back to the chief, and reported his experience. The chief began to wonder what was going to happen to them. Then Beaver said, "I will go down, and I will go through the water, so that he cannot see me." Now just as soon as he said these words, Coyote repeated them saying, "Beaver is coming to me through the water." He thereupon prepared for him by placing a dish of water in the middle of the room. Upon the water he sprinkled a quantity of down. This was to blind Beaver to his actions when he put his head through the water. Beaver started, and came down. He entered the house from beneath, and put his head through the water and down in the dish. Coyote struck at him with his dancing-stick, but as he was dancing near the door, and the dish stood in the middle of the room, he managed only to strike him on the fingers. Beaver retreated at once, and went back to the chief and said, "This man is too strong for us to play tricks with; he knows everything." Reindeer then asked his people again who among them had told this man their secrets. Now the fauns were lying down in a place by themselves and they said one to another, "Let us tell Grandfather that we told this man how to dance the snow-dance." They did so. Said the chief to them, "You should have told me this long ago. We must now all get ready to go down and dance with him." The two fauns thereupon started for the dance-house, and arrived before the others.

When the rest of the company got there, they found the two fauns already dancing. They went in, and the house was full of people. Coyote took no notice of any of them, but kept on dancing, waiting for the coming of the chief. Towards morning Reindeer appeared. He put his head through the doorway very slowly and cautiously. Thereupon the room became flooded with light, which emanated from the tips of his horns. He went no further, but gave one leap and was back again on the mountain-top. Coyote and the others still continued to dance. Presently Reindeer came down again. He put his head through the doorway as before, but did not retreat this time. He entered the room slowly. By this time Coyote had been dancing many hours, and was very tired, but remembering the instructions of his Scómeq, he still continued his dancing. As soon as Reindeer had entered the building he danced towards the doorway, and before Reindeer had reached the middle of the room, Coyote put down his dancing-rod and called out that the dance was over. Now, he neglected to put the rod in the doorway, as his Scómeq had instructed him, and when he called out that the dance was finished, Reindeer immediately leaped back through the door, and was off to the mountain again. The others followed him in like manner, and they all got away, except the two fauns. These Coyote killed. Thus were they punished for deceiving their Grandfather, and saying they had told Coyote how to dance the snow-dance, when he really got his instructions from his Scómeq.

Before leaving the subject of totems, as this is likely to be my last Report on the Salish, I would like to remark once more that a comparative study of the totemism of the Salish as a whole makes it clear beyond question or doubt that the group-totems found among them have sprung from, and are a development of, their individual totems, and that the same may be said of all other American Stocks.

As confirmatory of this view I would point to the recent discovery by Dr. Hart Merriam¹ of totemism in its three most characteristic forms, viz., the non-hereditary *individual totem*, the hereditary *patriarchal totem*, and the hereditary *matriarchal clan totem*, among the tribes of California where totemism was not known to exist.

LINGUISTIC.

The Phonology here employed is the same as that used in my former reports.

Numerals.

1 nuks.	9 huqumót.
2 ecfl or acfl.	10 ópenikst.
3 katlien.	11 ópenikst hetl nuks.
4 mōs.	20 ácil-ópenikst.
5 teilikst.	30 katl-ópenikst.
6 tak'um'kst.	40 mic-ópenikst.
7 cic'p'lk.	100 huteetcikst.
8 tEmtl.	

¹ "Totemism in California," *Am. Anthropol.*, vol. 10, No. 4, Oct.-Dec., 1908, by C. Hart Merriam.

When counting persons the following form is commonly employed:—

1 <i>man</i> , kE nuks.	6 <i>men</i> , kE tak'um'kst.
2 <i>men</i> , kE sacfl.	7 „ kE eie'p'lk'.
3 „ kE katlich.	8 „ kE tēmtēmtl.
4 „ kE mōcmec.	9 „ tēqunōk.
5 „ kE teilikst.	10 „ k'ōpōpēnikst.

Ordinals.

first, hutchit.

next, tekī'kât.

last, hâtséot.

Adverbial Numerals.

once, 'n'nuksalik.

thrice, 'nkatlélik.

twice, 'naelēlik.

four times, mōswē.

five times, teilikstwē.

Distributives.

one each, tate nanuks.

three each, tate katlich.

two „ „ as-acil.

four „ „ mōc.

ten each, tate ōpēnikst.

A comparison of these different classes of numerals with those of the Thompson and the Salish proper, as recorded by Father Mengarini, brings out at once a most interesting and suggestive similarity and dissimilarity.

PRONOUNS.

The Absolute or Independent forms of these in the Okanák'ēn are as follows:—

I, hīntça or īntça.

thou, ānūi.

he, she, teinitl.

we, mēnēmłtit.

you, mēnēmłtimp.

thy, mēnēmłtceileq.

Enclitic or Copulative Forms.

kēn(E)setc, as kēn(E)setc k'ēilt, *I am sick.*

kūetc, „ kūetc k'ēilt, *thou art sick.*

setc „ setc k'ēilt, *he is sick.*

kūōsetc „ kūōsetc k'alēiltq, *we are sick.*

petc „ petc k'alēiltq, *you „ „*

setc „ setc k'alēiltqeleq, *they are sick.*

The strictly pronominal elements are clearly :—

ken, 1 person sing.	kūō, 1 person plural.
kū, 2 " "	p 2 " "
s 3 " "	s, 3 " "

The other element is verbal. We find the same forms used alike in substantive and transitive verbs.

POSSESSIVES.

First Form.

<i>my</i> , in as in-kwatckim, <i>my hat</i> .	
<i>thy</i> , an „ an- „ <i>thy</i> „	
<i>his</i> , hē-s „ hē kwatckims, <i>his</i> „	
<i>our</i> , hē-tit as hē kwatckim-tit, <i>our hat</i> .	
<i>your</i> , hē-nemp „ hē „ -nemp, <i>your</i> „	
<i>their</i> , hē-sileq „ hē „ -sileq, <i>their</i> „	

Second Form.

Singular.

<i>my</i> , ē as ē-sk'ōi, <i>my mother</i> .	
<i>thy</i> , â „ â-sk'ōi, <i>thy</i> „	
<i>his</i> , hē-s „ hē-sk'ōi-s, <i>his</i> „	

These two forms are practically the same as those recorded by Father Mengarini, only he distinguishes between the sign of the third person singular, making it *s* in the first form and *z* in the second. I could not distinguish any difference in the two forms in Okaník'ēn, but that may be perhaps because my ear was not so sensitive to the *nuances* of the language as his.

Plural.

<i>Our mother</i> , hē-sk'ōi-tit.	
<i>your</i> „ hē-sk'ōi-yimp.	
<i>their</i> „ hē-sk'ōi-sileq.	

Incorporative.

Help, kēnhētmen.

<i>I will help them</i> , nēnwēs kēnhēt'nileq.	
„ „ „ <i>him</i> , „ kēnhēt'n.	
„ „ „ <i>thee</i> , wai nēnwēs kēnhētmen.	
„ „ „ <i>you</i> , „ „ kēnhēt'tlmen.	
<i>He will help thee</i> , nēnwēs kēnhēt'tlums.	
„ „ „ <i>you</i> , „ kēnhēt'tcotmentep.	

<i>He will help them,</i>	nēnwēs	kenunhētētn.
<i>I will help myself,</i>	„	kenkenq'tcōt.
<i>You will help me,</i>	„	kwōkskenhētep.
<i>Thou wilt</i>	„ „ „	kenunhētmen.
<i>You will</i>	„ us, „	kwōkskenhētmenēnstit.
<i>We will help him,</i>	„	kenhētētn.
„ „ „ <i>them,</i>	„	kenhēt'mileq.
„ „ „ <i>you,</i>	„	kenhēt'lumpt.
„ „ „ <i>thee,</i>	„	kenhētētempt (?).
<i>They will help us,</i>	„	kenhētētileq.
„ „ „ <i>me,</i>	„	kenhētētileq (?).
„ „ „ <i>thee,</i>	„	skenhētēmsileq.
„ „ „ <i>you,</i>	„	skenhēt'lumsileq.

Demonstratives.

<i>this,</i>	ânā, ēnē.	<i>this house,</i>	âna tcētq.
<i>that,</i>	yāñais.	<i>that house,</i>	yāñais, hē tcētq.
<i>the,</i>	hē, ta or tē.		
<i>these houses,</i>	ânā hē tcētcētq.		
<i>those</i>	„ yāñais hé „		

Interrogatives.

<i>which</i>	} sūēt ?	<i>whose house is that ?</i>	sūēt tlaks tcētq ?
<i>whose</i>		<i>what man ?</i>	sūēt tē skultēmēuq ?

VERBS.

The chief terms of the Okanák'ēn verb are formed in the following manner, which corresponds with neither Thompson nor Salish proper. Thus:—

ken'sete	k'ēilt,	<i>I am sick.</i>
hēwa	ken'sete k'ēilt,	<i>I was sick.</i>
teim	ken'sete k'ēilt,	<i>I shall be sick.</i>
ken	áimt,	<i>I am angry.</i>
hēwa	ken'sete áimt,	<i>I was angry.</i>
teim	ken áimt,	<i>I shall be angry.</i>

Negative and Affirmative Particles.

The negative has the form lōt and the affirmative kéō or more fully kéōa.

<i>Don't get angry,</i>	lōt āks áimt.
<i>I won't get angry,</i>	lōt teim ēks áimt.
<i>Are you sick ?</i>	ōtc pete k'ēilt ?
<i>Yes, I am sick,</i>	kéō, ken'sete kéilt.
<i>one house,</i>	nuks tē tcētq.
<i>two houses,</i>	acletltq.

<i>three houses,</i>	<i>katlatltq.</i>	
<i>four „</i>	<i>mōstltq.</i>	
<i>ten „</i>	<i>āpenikstatltq.</i>	
<i>many houses,</i>	<i>hōatltq.</i>	
<i>some „</i>	<i>tōqwēteētq.</i>	
<i>no house,</i>	<i>lōt tē teētq.</i>	
<i>„ houses,</i>	<i>lōt tē kan tē teētq.</i>	
<i>lots of houses,</i>	<i>talē hēt teētq.</i>	
<i>child,</i>	<i>skūkwēmelt.</i>	
<i>children,</i>	<i>sitemala.</i>	
<i>father, leōo</i>	} said by man ; mēstem tōm }	} said by woman.
<i>mother, sk'ōi</i>		
<i>my son, ē skw'scē.</i>		
<i>my daughter, ē stemkēēlet.</i>		
<i>elder brother, tlkōk'tea.</i>		
<i>„ sister, tlkikha.</i>		
<i>younger brother, tlcintea.</i>		
<i>„ sister, tlteiteōps.</i>		
<i>grandfather, hankfkūa.</i>		
<i>„ mother, stemtēma.</i>		
<i>great grandfather, s'haqpa.</i>		
<i>„ „ mother, hankōpsa.</i>		
<i>great, great grandfather, tatōpa.</i>		
<i>head, tzaciyākun.</i>		<i>tongue, tēūtek^E.</i>
<i>chin, k'tlkēmēpast.</i>		<i>eye, 'stuk'etlōcten.</i>
<i>tooth, aitemen.</i>		<i>ear, téna.</i>
<i>nose, s'pēsaks.</i>		<i>heart, spēōs.</i>
<i>mouth, sp'lemtein.</i>		<i>hand, kēluq.</i>
<i>face, sk'tlōc.</i>		<i>thumb, stōmīkst.</i>
<i>hair, kupkaīnten.</i>		

Following are some examples of continuous native texts :—

	<i>hatlkwēkwēna</i>	<i>natl</i>	<i>kweskwāśias.</i>			
	Mouse	and	herfamily.			
<i>kwitēūtiluq</i>	<i>hatlkwēkwēna</i>	<i>natl</i>	<i>kweskwāśias</i>	<i>ōtl</i>	<i>nī ak'ō</i>	<i>hē tē</i>
There was once	a mouse	and	her family	then	across	the
<i>sātftkwa</i>	<i>kōc-nauk^u</i>	<i>tē</i>	<i>sētl'n.</i>	<i>ōtl</i>	<i>tlatl</i>	<i>teimēak'ō</i>
river	to steal	some	food.	As	she	was crossing
				she	was	drowned.
						Then
<i>kwēntem</i>	<i>hē</i>	<i>tēs</i>	<i>kweskwāśias,</i>	<i>ōtl</i>	<i>hetl-teōistem</i>	<i>hē k'el</i>
took her up	her children,	then	brought her	to the house,	then	they
<i>suk skw'ksileq.</i>	<i>ōtl</i>	<i>skēlūq</i>	<i>sketēq</i>	<i>tēl</i>	<i>kumkenēltq,</i>	<i>teōn</i>
began to cry.	Then	a man	came	there	outside-the-house,	he said
						to them,

"p'etc skēnuq kēp'etc suk'kwāk?" Tcōtēleq, "Lōtetēm." "Kwōsetc kusk'asp
 "What are you crying for?" They say, "Nothing." "It is something
 sin m'estanq." Ōtl ēhē saiaintcōtcileq s'ketl stukuk' nōnemsileq hē
 which happened long ago." Then they began laughing to deceive-they the
 skeltēmēūq.
 man.

Sink'elēp tlā pāk'ek.

Coyote's Lesson.

Etcqōi Sink'elēp, ōtl wēks hē tcētq. Ōtl ēhē cqōic hē k'elē.
 He was travelling Coyote, then he saw a house. Then he went to the place.
 Ōtl hinōtltq. Ōtl wēks yāyāt hē stem hast. Ōtl wēks hē
 Then he entered the house. Then he saw all the things good. Then he saw the
 stuq'mén, ōtl hēnstēls wai-hēks-ckwuném hē stuq'mén. Ōtl kwēc. Ōtl
 comb, then he thought that he would take the comb. Then he took it. Then
 ēhē cqōic. Lōt silkwāk's, ōtl ēhē tūqnanwauqmentēm
 he went away. Not gone far, before it began combing him one way and the other
 hē te stuq'mén. Ōtl hēnstēls: "wai-ken'k's kaitcilhaq." Ōtl lots
 that comb. Then he thought: "I will run away (from the comb)." But not
 kutl-nēstc. Hē lē kētcōc hē stuq'mén: "Wai-hast, hetl hōistēmēn."
 able-to-escape. Then he told the comb: "Very-good, I will take you back."
 Ōtl hē lē tē'qēlem. Ōtl wēks hē k'kwōmēn. Ōtl kwēc, ōtl ēhē
 Then he did so. Then he saw the awl. Then he seized it, then he
 skaiteluh. Ōtl lōt silkwāk's, kē tlōtlōentēm. Ōtl hē wā tā lē
 ran away. But not very far, it began piercing him. Then he quicker
 kaiteluh. Ōtl tālē k'ailtēms hēs tlōtlōwaus. Ōtl tcōc
 to run away from it. Then very bad his-agony where he was pierced. Then he said to
 hē k'kwōmēn: "wai-hast wai-hetl hōistēmēn." Ōtl helē tē'qēlem. Ōtl
 the awl: "very-good I will take-you-back." Then he did so. Then
 wēks hē sinpēōten hētcensauq hē tē stolekwia, ōtl ēhē kwēc, ōtl
 he saw the bladder full of the fish-oil, then he took it, then
 séōsis, ōtl ēhē cqōic hē tē yatcēns hē tēk'ōt. Ōtl tā lē hēn
 he drank it, then he went along by the shore of the lake. Then very thirsty
 k'lāmēmtēin. Ōtl tē ēhēhē céōst. Ōtl tē ēhēhē céōst.
 he became. Then presently he drank. Then in little while he drank again.
 Ōtlhēnstēls, "wai-hast kentlatein qostētauq, ōtl mēkens céōst." Ōtl
 Then he thought, "it were better to wade in the water, and easier drink." Then
 tē qōi, ōtl kēm tē hē sp'lēmteins tē kēm kēte k'utlskaitekō.
 he proceeded, then with the mouth-his on a level with the surface of the water.
 Ōtl tē céōst ōtl k'lal. Ōtl k'sāpē kakēteintēm tuqwailuq. Ōtl
 Then he drank till he died. Then soon after he found him the fox. Then
 k'ōlētēm tliks hustūwēluh. Ōtl Sink'elēp tcōt: "k'sāpē māt-hālā-
 he made him again to become alive. Then Coyote said: "sometime I must have
 hē-c'ētq hālā. Tcōntēm tuqwailuq: "Ōtc mēpenōntūq k'wilate p'sāiya?"
 been asleep here. To him said the fox: "Did you find out your stupidity?"

Hē Snéna.

The Owl.

How the Chipmonk got its stripes.

Otl tlatl kwelēōm anē te cía ōtl kētcēntēm tē snéna, ōtl teōt :
 While she was picking berries there came to her the owl, and he said :
 "hēhōtēm hōitsauqtq, an mēstem k'qamēneks," ōtl hēhōtēm teōt :
 "little girl come down, your father wants-you," then little girl said :
 "hōiqen lōt kentáktl mēstem k'sápē kēt'lel." Ōtl teōntēm : "hōi-
 "ha ! ha ! not I have a father long ago he died." Then to her he said : "well-
 kwa, tsauqtq, an tōm qamēneks." Ōtl teōt, "hōiqen lōt kentáktl
 then, come down, your mother wants you." Then she said, "ha ! ha ! not I have any
 tōm." "Ōtl lōt tlaks tōm sūēt-kwa as-nuksēluq ?" teōt hē
 mother." "Then not any mother what relations have you ?" said the
 snéna. Ōtl teōt hē hēhōtēm : "tē kemēq ken'ks stemtéma." "Wai-
 owl. Then said the little girl : "just only I have a grandmother." "All-
 hast hōikwa tsauqtq, ā-stemtéma k'qamēneks kwtl kwōiya."
 right then come you down, your grandmother wants you to go home."
 "Hōikwa hintuk'tuk'sinteōt mēsite kentsanq." Wetl hē snéna hintuk-
 "Well then cover up your eyes then I will come down." So the owl covered
 tuk'sinteōt ōtl lōt tālē sinzsanz, ōtl wēkentēm hēt hēhōtēm lōt
 his eyes but not very close and see him could the little girl not
 t'el tālē sintuk'tuk'sinteōts. Ōtl teōntēm hēhōtēm : "tālē
 very tight covering his eyes with his hands. Then said to him the little girl : "closer
 sintuk'tuk'sinteōt, mēsite ken-tsauqtq." Ōtl tē'qēlem. Kwōmētl site-
 cover up your eyes, then I will come down." Then he did so. Thereupon she
 tsauqtq hē hēhōtēm. Ōtl tlitwēlentēm kē ynp-kwēc, ōtl
 came down the little girl. When she passed by him he grasped-at-her, but
 tēkmēq naqaqkīc. Ōtl snéna tsumēntac hē k'ók'ók'aínstens, ōtl
 only-just scratched her back. Then owl licked the claws-his, and
 teōt : "heqehēhōtēm qeq s'ēlt'sa." Ōtl ēhē sitl-kaitceluhs keli-stem-
 said : "little girls are nice-tasting." Then she ran to grand-
 témas tālē 'nhaitl. Ōtl tlatl kēteq teōntēm hē tē stemtémas :
 mother-her very frightened. When she got home said to her the grandmother-her :
 "Kw'ōts kēnūq ?" Ōtl éwā k'steōtaq, "snéna," ōtl tē hes teōsts :
 "What's happened ?" Then she tried to say, "owl," but she could only say :
 "snā," "snā," "snā." Ōtl wēkwentēm ē tē stemtémas el sētsem,
 "ow," "ow," "ow." Then she was hidden by the grandmother-her in a blanket,
 ōtl tē pēnl'k' hē teōt : "snā," "snā," "snā." Ōtl hentuk'wontēm el
 but all the time she was saying : "ow," "ow," "ow." Then she put her into
 skok'rána. Ōtl k'āentēm k'elán wict. Ōtl lōts k'sápēs kēte skēteq
 an oyster-shell. Then she stuck her upon a rafter. Then not long after came
 snéna ōtl teōt : "Ōte-kōwiktltq ē-skílkēlem ?" Ōtl teōt hē p'ep'te-
 owl and said : "Have you seen my-wounded prey ?" Then said the old-

wénauq : "Lōt kentawēkem." Ōtl hē āētekwāla kāmamōtit, ōtl teōt :
 woman : "No, I havn't seen it." Then the lark lit above, and said :
 "Wolwolkenwēuq kwā sk'ok'rāna." Ōtl teōt hē snēna : "Otc nēqilmentq
 "Closed up, in the shell of the oyster." Then said the owl : "Did you hear
 setc sēntq?" "Steotq wilwolkenwēuq sk'ok'rāna." Ōtl k'lak'lōsems,
 what it said?" "He said it is closed up in the shell of the oyster." Then he looked around
 ōtl kākētecs el sk'ok'rāna. Ōtl citz-pōlste'. Ōtl nānēkēs. Ōtl
 then he found it in the oyster. Then he killed her. Then he cut her into pieces. Then
 pēnt'k' tlats nēkem hēts h'lēltēm hē te p'ep'tewénauq. Ōtl site yāyāt
 always when he cut a piece she would beg it the old-woman. Then she all
 kwinēnōs hē sk'ēltiks hē hēhōtem k'em tē kemēuq hē cpeōs. Ōtl teōt hē
 got it the body-her the little girl except only the heart. Then said the
 snēna : "Intea kēmkenik speōs." Ōtl itle. Ōtl ēhē sqōie. Ōtl yāyāt
 owl : "I will take the heart." Then he ate it. Then he went away. Then all
 tuk-tāk'ummenwēukste'. Ōtl site-k'ols hē te cōméke. Ōtl site tel-
 (the body) she put together in their places. Then she-made the medicine-her. Then she made-
 skēlukste. Ápēna hē site nahakens ē ōkutssawēya, ēhē an teiltēil-
 her-come-to-life. Now these are the stripes-her of the chipmonk, the scratch-
 Hawēkentēm hē te snēna.
 ings of the owl.

The last of these three texts is a particularly interesting and suggestive one, on account of the liveliness of the style, changing as it does so constantly from the oblique to the direct mode of speech, and, except in the long compound words, is very easy to follow and put into literal English, the order of these words being so like our own.

Following are some Okanák'ēn myths in English.

Myth of Sinkelép the Coyote.

Coyote was once on his travels, and came at the close of day to the house of a giant, whose name was 'Swanaftēm. He determined to spend the night here. He went in and found the giant lying on his back. He did not speak to, or take any notice of, Coyote. Some of the other inmates of the house accosted him, but Swanaftēm never moved. There was no fire in the house when Coyote entered. Presently 'Swanaftēm got up and took two round boulders that lay at his right side, and knocked them together. Immediately they began to burn like a fire. He now told his people to prepare supper for their uncle, meaning Coyote. They did so, and Coyote made a hearty meal. They then gave him a blanket to sleep in. Now, he had been much struck by the way in which 'Swanaftēm had made his fire, and thereupon had determined to possess himself of these wonderful fire-stones. At bed-time 'Swanaftēm took the fire-stones from the fire-place, and put them back by his bed-side again. Coyote waited till all were asleep, then got up and took the two fire-stones from the giant's side, and got away with them. He went up the ladder, and as soon as he got outside, began to run as fast as he could. He kept on

thus till break of day, and presently he perceived a large tree before him with many spreading branches. "I will go up there and rest," said he. He climbed the tree and lay down as he thought on a broad branch and slept. In his sleep he heard 'Swanaftem's voice saying to him, "What are you doing with my fire-stones up there? My children want a fire." Coyote woke up, saying to himself, "I think somebody must have overtaken me." When he looked about him, he found that he was not in a tree at all, but only half-way up the ladder of the giant's house. He came down and threw the fire-stones at the giant's side, in deep disgust. 'Swanaftem then took up the stones, knocked them together, and immediately they began to glow, as before. 'Swanaftem's people now cooked their breakfast, giving Coyote his portion. As Coyote observed again the magic power of the fire-stones, he said to himself, "I must have those stones at all costs; besides, I don't like being fooled. I will wait till night again, and when I get the stones I will keep on going and not stop at all." So he waited till night came; but 'Swanaftem knew what was in Coyote's mind. Said Coyote to himself, "I will keep on talking, and that will keep me awake." Night came, and when Coyote thought all asleep he got up. Said he to himself, "Now, I am getting up; now, I am starting to walk; now, I have taken the fire-stones; now, I have got to the foot of the ladder, now, I am climbing up; now, I am at the top; now, I am outside; now, I am starting to run." Thus, he kept on going, and as he knew the country thereabout quite well, he would say to himself, "I am here, or I am there." All night he went on in this way, thinking he was getting farther and farther away with his plunder. At daybreak, when 'Swanaftem's people woke up, they saw Coyote running round and round the fireplace, talking to himself. He was sweating with his exertions. 'Swanaftem called out to him, and told him he wanted his stones to light the fire for breakfast. Coyote woke up, and found himself still in the house. He threw down the rocks and sat himself down. "I have been badly beaten," thought he, "and I had better give up the game." After he had eaten his breakfast, he left and went on his way.

The Making of the Sun.

A long time ago the world was all dark; there was no sun. So all the people came together to make a sun. Somebody proposed that quilquiláken, the red-headed woodpecker, should be put in the heavens for a sun. He was accordingly put up, but was found to be too hot; and objections being made, he was taken down again. Then Skwirhan, the Crane, was chosen, but objections were made to him also. He was so long in the legs that noon arrived before he was properly up. This made the day so short, that it was advisable to try someone else. So they took down Crane, and put up Sinkelép, the Coyote, in his place. Now, every time Coyote rose, he called out and told everybody what he saw going on. This so greatly displeased the people, that he was speedily called down. The people then chose Sluk-wactilt, one of Coyote's sons, and placed him in the heavens. He gave great

satisfaction, and so was allowed to remain. Haiyá'cenūq is the present name of the sun.

Skōenak'wiliq tateūqap k'lanwiet temqōlauq.

Stealing the fire from the Upper World.

Once there was no fire, so all the people met together to discuss the problem of procuring the fire. They wonder how they can best get up into the Upper World. At last, it is determined to make a chain of arrows. Accordingly, an arrow is shot into the sky, but it would not stick fast. They all try one after another, to make their arrows stick, but fail till Tsiskák'ena, a certain bird, shot his arrows home, and left his last arrow suspended in such a way that the others could attach theirs to it. Presently, the chain of arrows is complete, and they all climb up. When Skōkāwelhaq, the Snake, got up, they ask him what has happened to his friend Swārāk'hēn, the Frog. He pointed with his hand to his stomach, and they conclude he must have swallowed him coming up the arrow chain. They now consult together as to the best method of procuring the fire. It is determined that Stōnūq, the Beaver, should get into the water and be caught by the fire-people who were fishing at that time close by; and that when he was being skinned Mílakēnōps, the Eagle, should fly over and attract the people's attention and draw them away from Beaver, who was then to seize the opportunity and make off with a portion of the fire. Accordingly, Beaver entered the stream where the fire-people were fishing, and allowed himself to be caught by them. They immediately took him home, and began to skin him. They had just cut open the skin at the breast when Eagle flew over and attracted attention. Everybody seized his bow and arrows, and followed after Eagle to try and bring him down. Beaver, seizing his opportunity, immediately jumped up, and placing some of the fire inside his skin, where it had been cut open, made off back to his companions, where he was presently joined by Eagle. There was great excitement now at the top of the ladder, as to who should get down first. In their pushing and striving the chain of arrows broke before they all got down, and some of them had to jump for it. Catfish fell into a hole and broke his jaw all to pieces. Káfkqilnq, the Sucker, struck his head and smashed all the bones, in consequence of which all the other animals had each to contribute a bone to give him a new head. Thus it is that the Catfish has such a peculiar mouth, and the Sucker such a peculiar head.

It is interesting to compare this myth of the source of fire with that collected from the Thompsons. Alike in certain points, they are wholly unlike in others.

How Coyote brought the Salmon up the Columbia and its tributary rivers and streams.

Coyote was once going down the river (Columbia) when he was overtaken by a great wind storm, which nearly blew him off his feet. Thereupon he began to wish that the wind would come still stronger and carry him along. Presently a great blast took him off his feet and carried him up into the air. When the wind began to slacken and he found himself falling he saw that he was over the

middle of the river. He immediately wished to become a wooden dish, which he did, and floated down the stream. He came at length to a place where there was a salmon weir (*stemōs*). Now the people who owned this weir were birds (*Ūwitlawitlt*). There were two of them, both women. In the morning when they went to the weir to get their salmon they saw this dish lodged against the framework. The younger woman cried out and said, "What a nice little dish! I will take it home, it will just do for me." So she took it home and used it for eating her salmon out of. She left a large piece of salmon on the dish, while she and her sister went into the woods. When they came back it was all gone. They wondered what had happened to it. Said the elder, "I think you should throw that dish into the fire; it may be Coyote." The younger sister then threw it into the fire, whereupon it cried out like a child. The cries so wrung the tender heart of the younger woman that she took it out again, saying, "He shall be my youngest brother." They take him up and feed him, and whenever they went away they tied him up for safety with a line. As soon as they had gone away Coyote would untie himself and go down to the weir and try to break it down. This state of things went on for several days, till at last Coyote had so weakened the weir that he could easily break it open whenever he desired.

One day when the women had gone away and left him tied as usual, he determined to break the weir and get away. But the task took him longer than he thought it would, and the women returned before he had finished. When the women got home they saw that the child had untied himself and got away, and they went down to the weir to look for him. When they got there they saw that he had nearly destroyed their weir. They tried to stop him but could not. They struck at him with their digging sticks, but he covered his head and shoulders with their big horn spoon (*ilak'ōt*), which he had taken with him, so that when they struck him he did not feel the blows, and went on with his work of demolition. In a short time the weir was broken down and the salmon came up the river. He walked along the banks of the river and the salmon followed him in the water. Whenever he camped he stopped the salmon by motioning to them. He took them up the river (Columbia) and came at length to the Falls. Here Wolverine lived with his daughters. Coyote took one of these to wife, and stopped the salmon here by making the Falls. He stayed here with Wolverine for some time, then he came up the Okanagan River and brought the salmon with him. He also went some way up the Similkameen River to the camp of the mountain sheep (*Ēlekwlūqken*). They knew what he was doing but did not want the salmon, and told Coyote they did not want him or his salmon. This made him angry, and he said, "You will always have a good river, but no salmon will ever come up it." Thus it is that no salmon go up this river. Coyote then retraced his steps and took the salmon up the Okanagan River to the Falls and into all the streams of that part. Thus came the salmon.

I have recorded several salmon myths of the Salish, and it is of interest to compare this with the others.

Myth of Skunk (enikstía) and Fisher (teirtōps).

Skunk and Fisher lived together in the same house, and went out hunting daily in the mountains. Now Chipmonk (K'ōk'otsawēya) and King-bird (Stēták) lived with their grandmother in the same locality. Said their grandmother to them one day, "Go you now to the dwelling of Skunk and Fisher and hide yourselves under Fisher's bed, but don't have any dealings with Skunk; keep away from him altogether." So the two girls went to the house of Skunk and Fisher as their grandmother had directed, and hid themselves under the latter's bed. They had no difficulty in distinguishing between the two beds. One was sweet and clean, the other was foul and yellow-stained. This latter they knew must be Skunk's, so they avoided it. Under each bed there was a kind of cupboard. They hid themselves in the one under Fisher's and waited there for the hunters to come home. Now it happened that Skunk came home first. The girls knew that it was Skunk by his smell and because he repeatedly discharged wind. The younger girl began to laugh. The elder sister chided her, telling her not to laugh at Skunk's vulgar noises. But she could not control herself and laughed aloud. Skunk heard the laughing and looked about to see who was there. He searched all round the dwelling but found no one. He went outside again and discharged wind a second time. Again the younger sister laughed aloud, and from the direction of the sound Skunk knew that the laughter was inside the dwelling. He returned to the house and made a careful search about his partner's bed and presently discovered the girls in the cupboard beneath it. Said he: "Which of us two men do you wish for husband?" They replied, "We want Fisher." When Skunk heard this he said: "Why don't you take me? I am the headman." After some persuasion the two girls were induced to accept Skunk as their husband. Skunk placed them in his cupboard. Presently they heard Fisher coming home. As he walked he made a noise which distinguished him from Skunk. Said the elder sister to the younger, "That is the man we should have chosen, but because of your laughing we have got the wrong husband." Fisher came in and saw Skunk lying on his back doing nothing instead of cooking the supper. Said Fisher to him, "Why haven't you got supper ready as usual?"

Skunk replied: "You mistake; I am not the cook; I am the chief." Fisher tried to coax him to cook the supper, but he steadily refused, and Fisher had to prepare it himself. When the food was ready Skunk said to Fisher: "Let us put some food in our cupboards and see what will happen to it." Fisher thought this a strange trick, but agreed to do as Skunk suggested. Accordingly each put a platter of food in his cupboard beneath the bed. After a little while they opened the cupboards and took out the platters. Skunk's platter was empty, but Fisher's contained the food he had placed on it. When Fisher saw Skunk's empty plate he was certain there was something wrong and made up his mind to investigate. So next morning Fisher loitered about the house instead of going off hunting as usual. Skunk did the same, and Fisher was sure from this that he was trying to

hide something from him. Fisher now tried to induce Skunk to start. Said Fisher to him, "I wish you would go and bring home the meat I killed yesterday. I am going to hunt in another direction to-day." Now Skunk was equally determined to stay behind, so he said, "All right, you go ahead; I'll start presently. I have something I want to do first." But Fisher was not to be tricked in this way. Making as if to start, he took a big stone and rolled it away from the house in such a way that it sounded like a man walking off and hid himself between the layers of matting of the lodge. When Skunk thought Fisher was gone he took the girls out of his cupboard and began to laugh and sport with them. After a while he bade them go back into the cupboard again and started out to get the deer Fisher had killed the day before. When he was out of sight Fisher left his hiding place and went into the house. He took the girls out of Skunk's cupboard and asked them which of the two they had come for, he or Skunk. They tell him for himself and relate how the laughter of the younger had led to their discovery by Skunk. Said Fisher: "Never mind, we'll trick him yet." He now asks them where they lived. They tell him their dwelling was in a certain rock. Said he: "We'll go there, but first we'll burn down the lodge and go up through the smoke so that Skunk will not be able to trace us, for if Skunk should find our trail it will be all up with us." They fired the lodge and passed up into the air with the smoke and presently alighted on a great boulder on the side of the river. Now Skunk had met with very bad luck that day. He had cut up the deer and made up his pack of meat and started to climb the mountain on his way homeward, but when he was about half-way up his packing straps broke, and before he could recover his pack it had rolled to the bottom of the mountain again. This happened to him several times, and he began to think there was something wrong, and left his pack behind him and climbed the mountain without it. When he reached the top and looked in the direction of his lodge he saw nothing but a cloud of smoke. He rushed toward the spot only to find a heap of smoking ashes.

Now it was his custom when he went hunting to leave his *spatz*¹ behind him. This had nearly been all burned; only a small portion was left from the fire. He searched all round for tracks but could find none. Being thirsty he went down to the river to quench his thirst. As he stooped to drink he saw the reflection of Fisher and the two girls, who were seated on the boulder, in the water before him. He straightway squirted a stream of *spatz* at them in the water. He does this again and again, but to his surprise it takes no effect upon them. Presently he perceives that it is their reflection in the water that he has been squirting at. He now steals up to the upper side of the boulder and squirts his *spatz* at Fisher. It struck him on the toe and killed him. Thereupon he takes the girls down from the rock, and they pretend to be pleased to see him again. He now takes them to wife. He copulated with them all that day and into the night, when he slept soundly from exhaustion. The girls now leave him and cause the rocks to rise

¹ The offensive yellow fluid which the skunk secretes for its defence against its enemies.

up and encircle him; then they leave him and go home to their grandmother. When Skunk awoke and tried to get out he found the hole so small that it was impossible for him to get through. The only way he could possibly get out was to take himself to pieces and put out one bit at a time. This he did and put himself out piece by piece till nothing but his *sinhaHops* (the bag in which he carried his *spatz*) remained. Now Raven (*yūElteloq*) had been watching him, and when he saw the *sinhaHops* coming through the hole he tried to steal it. But Skunk withdrew it in time to save it. Then he thought: "If I don't want Raven to steal it I must throw it out and rush after it quickly." He tried to do this, but Raven was too smart and got away with the *sinhaHops* before he could get out. Skunk now put himself together again and went after Raven. After travelling a long way he came upon a great gathering of people who were having great fun playing with his *sinhaHops*. When it rolled it looked like a great ball of fire. Skunk watched his chance to get near the ball, and presently when it came near where he was waiting he rushed out and sat down quickly upon it and the *sinhaHops* fell into its place. He now went to the people's houses and squirted the *spatz* everywhere and killed many of the people. From here he went on to another settlement, and told the people there that he was travelling round with good news, and that if they would all come together and fasten the house up tight he would tell them the news. They did so and assembled together in great numbers and closed the house up tight even to the roof. Then Skunk squirted his *spatz* over them and killed them all in revenge.

This happened a long time ago on the Okanagan River, where the rock upon which Fisher and the two girls alighted now stands.

Coyote, His Four Sons and the Grizzly Bear.

Coyote had four sons, and the grizzly bear (*Kēlaúna*) had several daughters. Coyote's eldest son said to his father, "I think I would like to go and ask *Kēlaúna* for his eldest daughter." "Very good," said Coyote, "you can go." So the son put on his quiver of arrows, took his bow and started off. When he got to *Kēlaúna*'s camp, the Mother Bear said to him, "I am very glad to see you. Come in, and go and sit down with your wife." Before he entered, he took off his quiver and laid it on the ground at the entrance. While the young man was inside with his wife the Mother Bear went outside, and stepping on the points of his arrows, broke them off. Presently she returned to the house and told the youth that a grizzly bear was on the hill across the river, and suggested that he should go and shoot it. Acting on her suggestion he left his wife, entered his canoe and crossed the river after the bear. Before he started the mother spoke to him in this wise:—"When you get across be sure to attack him from the base of the hill; don't climb the hill, and go beyond him." He promised to follow her instructions, and when he got near the bear, took out his arrows, and began to shoot at him. The bear fell down, and began rolling down the hill towards the youth, who continued shooting, thinking his arrows were piercing the bear each time. When the bear

was close to the young man, he sprang up suddenly and killed him. He had merely feigned death, as none of the arrows had pierced him, their heads having been broken off by the old woman. Some time after the second son asked his father's permission to go and marry one of Kēlaúna's daughters. Receiving his father's consent he set out for Kēlaúna's camp. He met with the same fate as his elder brother, as did likewise the third and fourth son. Each was tricked and killed in the same manner.

Now, Coyote had a fifth son named *Seānéuq* (Muskrat). He had been away from home for a long time undergoing his *Steúentcut* (that is, seeking his personal totem). He was aware of his brothers' fate, having been informed thereof by his *Scómēq* (personal totem). He was making himself powerful to resist and overcome Kēlaúna, and avenge his brothers. When he had finished his course and returned home he said to his father, "I will go and visit Kēlaúna, too. I don't think she will trick me." He took with him some extra arrow heads and fastening threads, and hid them on his person. When he arrived he laid aside his quiver, and having entered was bidden welcome by Kēlaúna and told to go and sit with his wife. Presently the old woman came running in, and asked him to go across the river and shoot a bear that was on the hill opposite. She gave him the same instructions as she had given his brothers, but he had no intention of following them. When he got across the river he refixed the points of his arrows with the spare heads he had brought with him, and instead of attacking the bear from the lower side as his brothers had done, he climbed beyond the bear and began to shoot him from above. Every one of his arrows went home, and the bear was killed. He rolled down the hill and lay at the bottom dead. Kēlaúna had watched the whole proceedings, and saw the bear roll down the hill, followed by the youth.

She was much disturbed by the failure of her stratagem, and determined to attack the young man herself as soon as he got across the river. Meanwhile she shouted to him to cut off the bear's head and bring it across to her. The young man did so, and put the head in his canoe, and started across. As he neared the bank Kēlaúna pretended to be very pleased to see him coming back safe and sound, and went down to the edge of the water. When the canoe was near enough she put out her hand to seize it, but Muskrat upset it, and grasping the head of the bear, swam down the river with it, to his father's camp.

Arriving there, he threw the head in the house, and continued on down the river. Coyote now perceived what had happened to his sons, and began to jeer at and taunt the bear's head. Kēlaúna had followed after Muskrat and presently came near Coyote's house, and heard him insulting and making fun of her husband's head. Said she to herself, "I will pay you out for this, my friend." Coyote had prepared for the conflict he knew awaited him with the bear, and when Kēlaúna came in expecting to find Coyote, she saw nothing but her husband's head, and a heap of wriggling maggots. She did not care to disturb this. She looked around everywhere for the person who had been reviling her husband's head, but could see or find nobody. Presently she took the head and went away

with it. She had gone but a little way, when Coyote appeared at his door and began to mislead and abuse her. Said he, "You think yourself a very smart woman, no doubt, when dealing with mere boys, but you are no match for a man like me." She instantly dropped the head, and ran at Coyote.

He sprang aside, and rushed away as fast as he could, she after him. When he had got out of her sight he changed himself into a boulder, and when Kēlaúna came up to where she thought she had him, she could see nothing but a boulder, which in her rage she snapped and bit at so savagely that she broke off some of her teeth. In a little while she gave up the hunt, and started homewards again. She had gone but a little way when Coyote, assuming his proper shape, began to revile and abuse her again. She started after him a second time. He ran on till he crossed the brow of the hill, when he changed himself into a rose bush (skōq(ē) wtlp). Kēlaúna was running so fast that when she came up to the rose bush she could not stop herself, but ran right over it, and scratched her body rather badly. She still kept on, but had only got a little farther when Coyote, assuming his proper form, began to jeer and mock her again. He repeated these tricks again and again until he had thoroughly exhausted her, and she gave up the chase in disgust and returned to her own home.

There are two points of particular interest in this myth. First the taking off and leaving outside the quiver of arrows. We get here a genuine glimpse, unconsciously given in the recital, of an interesting custom in vogue among these tribes in earlier days. When paying a friendly visit a man must not go into his friend's house with his weapons upon him, but leave them outside. And secondly, the cutting off the bear's head. Kēlaúna wanted to secure the head of her husband, it being highly disrespectful to let the heads of slain game lie about in the woods.

Among these tribes whenever a bear was killed its head was reverently and decorously placed in a tree or on a pole or rock so that it could not be disturbed or clawed by any other animal. If this were not done it was believed the bears would be angry and not let the hunter kill them again. Hence the wife's desire to secure her husband's head when she saw he was dead, and that his body belonged to the youth; and hence the youth's taking it off with him so that she should not have it, and Coyote's insulting it.

It is in such points as these that the chief value of these myths lies. In no other way now can we get real and genuine glimpses of the forgotten past. They are our only reliable record, and because of this it becomes of the highest importance to collect and record them while there is yet time and opportunity. The old people, who are the only reliable repositories of the tribal lore, are rapidly passing away, and in a few years none of them will be left, and our opportunity of securing these records at first hand will be lost to us for ever.

Coyote and Fox.

Coyote and Fox were once travelling together in winter on the ice. Now Fox had a tassel at the end of his tail which rang like a bell as he moved. Coyote

very much desired to possess this tassel for himself and begged Fox to give it to him. Fox at first refused to part with it, but Coyote begged so persistently that Fox in the end gave him the bell-tassel. Said Fox, "You must not forget you are carrying it, and must follow the line of the river and not try to go across country with it." Then they parted. Coyote travelled a long distance following the windings and turnings of the river without striking anything with the bell-tassel. Presently he perceived some haws a little way up the bank, and being hungry determined to stop and get some. So he made for the bushes and filled his stomach with the haws, but in moving among the bushes he dropped the bell-tassel. When he had finished his meal he started on his journey again, but the bell-tassel being fastened to his intestines these were dragged from him till he fell dead. Now Fox soon became aware of his condition and went after him. He presently found him and replacing the intestines restored him to life. Coyote endeavoured to persuade Fox that he had merely been asleep. "That's a lie," said Fox, "you lost the bell-tassel and had your intestines drawn from you, and I had to replace them and restore you to life." Coyote wanted the bell-tassel again, but Fox would not let him have it, whereupon Coyote got angry and went off by himself.

The Lazy Boy.

tētēmōtl te títūēt.

There was once a boy who was very lazy and caused his father much trouble. One morning the father determined to move his camp and leave the boy behind. Now the boy had a bow and some arrows, and when he saw his parents preparing to move camp he placed his bow and arrows in the canoe. The father perceived the act, and when about to start he took the bow and arrows and placed them on the bank without the boy's knowledge. As they began to paddle the father asked the boy, "Where are your bow and arrows?" "I put them in the canoe," replied the boy. He then looked for them but could not find them. Said the father to him, "I saw them just now on the bank by the camp; you had better go back and get them." The boy jumped ashore and went back to the camp. The father thereupon paddled off and left the boy behind. Presently when he had found his bow and arrows and got back to the river's edge he saw that his parents had purposely gone away without him. He sat down and cried, wondering what he would do. Presently he determined to wander about till he died from starvation or till a grizzly bear found and devoured him. He set out to climb the mountain, and had not gone far when he met a she-bear with cubs. He lay down in her path and waited for her to come and kill him, but she turned aside and took another path. Seeing this he jumped up and ran and laid himself down again in the direction she was travelling. Again the bear and her cubs turned aside, and he had to repeat the manoeuvre many times before the bear came his way. The cubs discovered him first and cried out to the old bear, "Oh, mother, we have found a little brother." Said the old bear, "Leave him alone, it is only a worthless boy ;

gathered in this manner a great quantity of beads. He told no one what he was doing, not even his parents, who thought he was undergoing his steñtent. His two sisters were accustomed to play a little way from the house, and had been instructed by their parents not to follow their brother or worry him in any way. But they grew curious to know where he went and what he did, and determined to find out for themselves. So one morning they followed him. They hid themselves and watched till he went home. Then they went to his store of beads and took some of them and trimmed their dolls with them. Next day when the brother went back to the lake he discovered that some one had been there and had taken some of his beads. He came home early and watched his sisters go to the lake and take some more of his beads. He then went to his mother and told her that his sisters had followed him and pried upon his actions. He advised moving the camp and leaving the girls behind as a punishment for their disobedience. The whole camp then moved before the girls returned, first destroying all the fire-places and putting out all the fires. In the evening when the girls got back they found the camp deserted, the people all gone, and the fires dead out; nothing was left but one small dog tied to a boulder at which it scratched from time to time. The girls realising their forsaken condition were greatly distressed and cried much, but presently, observing the action of the little dog, began to wonder why he scratched at the boulder. Finally one of them went over and rolled the boulder aside. As she did so a large hole was disclosed. She looked down this and perceived her people far down. But the girls could not follow after them because there was nothing by which they could climb down. They cry and cry to their parents to take them down. Finally the mother tells their brother to take pity on them and go and fetch them down. He said he would if they would be obedient for the future. They promise. He then went up to fetch them. Said he: "You come with me; I will carry you down, one under each arm, but you must be sure to keep your eyes shut." When partly down they opened their eyes and immediately they were pulled back to the top again. Said he: "If you want to get down you must keep your eyes closed until I tell you to open them." Twice and thrice he endeavours to take them down, but each time they open their eyes and are brought back to the top again. After the third time he said to them: "It is no use to try and take you down, you will not keep your eyes closed; you had better go and live with your grandmother." He then instructs them in what direction they should travel. Said he: "It will take you some days to get there and you must be careful not to eat any stale food that may be offered to you on the way." They set out on their journey and presently come to a river, on the opposite side of which they perceive a camp. They cry out for some one to come and ferry them over. A man came out and called to them saying: "My bark canoe is broken, but you will find a fording place a little way down the river." Now this man was Seagull (snúspépāsas) and he knew that the girls were coming and was intending to trick them. He had by him an old deer-hide, and by making his nose bleed and smearing the blood over the hide he made it look like a green hide. The

girls, following his instructions, soon found the ford and crossed over the river. They go back to the house of Seagull and ask him which road they should take to reach their grandmother. When they arrive Seagull invites them in and instructs them as to their course. He also sets before them a large horn-spoon full of grease. The elder sister poked the younger with her elbow and told her not to eat any. But while the elder sister talked with the man the younger dipped her finger in the spoon and took some of the grease. Presently they left and went on their course. When they had gone a little way the man called after them and said: "If it be a boy save it, if a girl drown it." By this remark the elder sister knew that the younger had taken some of the grease. After they had travelled some time they came to a level piece of land. Said the elder sister to the younger, "I will jump four or five times and you must follow, after taking care to step in my tracks." She did so, but the younger sister failed to tread in her tracks, and gave birth to a child before she had covered the distance; it was a boy. The elder sister now shouted back to the man and reviled him and bade him come and fetch her sister. She went on alone. The man now took the younger sister and her child back with him. Now the elder carried with her a basket (péna) and a root digger (pítca). She hung the basket on a tree and sat down to rest.

Now Lynx (wápwohen) knew that the girl was travelling that way and sent his brother Rabbit (S'pépefina) with a piece of fat to give the girl something to eat; this fat was real deer's fat. When Rabbit came up to her he found her asleep. He put the fat in her basket and returned before she had any knowledge of his presence. When she got up next morning and had washed herself she took down her basket to get something to eat. She immediately detected the lump of fat the Rabbit had put in the basket. She examined and compared it with the grease she had brought with her. She then took a piece of the new fat and threw it on the fire to see how it would burn. She did the same with a piece of her own fat, and found that both burnt alike. She sat down debating with herself whether she should eat the new fat or not, but recalling what had happened to her sister she determined to take no chances in the matter and threw the whole lump into the fire. She then made her breakfast from her own piece of fat and went on her way.

Now when Lynx had given the lump of fat to Rabbit he had told him it was for his sister-in-law. When Rabbit was on his way back he thought he would like to see what kind of a woman his sister-in-law was. So he hid under a log and waited for the girl to come up. When the girl stepped over the log Rabbit laughed and said: "I saw something white." The girl took her root digger and struck Rabbit with it but only just brushed his nose. Rabbit then ran off home. When he arrived he held his nose in his hand. "What's the matter with you?" said Lynx. "Oh! I fell down," said Rabbit, "and hurt my nose." But Lynx suspected he was lying and said: "I told you to deliver the fat and come straight back."

In the meantime the girl had continued on her way, and all at once she heard

something knocking. Going towards the sound she came upon her grandmother, who was splitting firewood. The girl advanced slowly and sat down on the log. The old woman did not see the girl, but her weight on the log made a difference in the sound of the blows. She looked up to see what caused it, and saw the girl sitting on the log, and knew her for her grandchild. The girl told her grandmother all that had befallen her.

Now the old woman desired to get her granddaughter home without any of the people of the village knowing of her arrival. So she took a quantity of wood, and, placing the girl in the middle of it, thus managed to get her to her house. But it was not very long before her presence in the village became known, and whenever the old woman left her house it became necessary for her to securely fasten the entrance. Every young man in the village wanted to secure the maid, and the old grandmother had the greatest difficulty in putting them off. The old woman kept her thus secluded for some time. One day, however, she had to go to a distant point, and in her absence that crafty youth Lynx stole round to her dwelling and, climbing on to the roof, peeped in and saw the girl lying asleep. Her mouth was against one of the rafters, and perceiving this he urinated on the rafter, and a drop of the urine ran down the rafter and fell into her mouth. Thereupon he left and went away. As time passed by the girl found herself with child, and when the old woman perceived her condition she was very angry, and reproached the girl bitterly. The girl denied all knowledge of the affair, declaring she had never known any man, and had no knowledge of the man responsible for her condition. In due time she gave birth to a man child. Some time after the grandmother gave a great feast to celebrate his birth, and invited the whole village to be present. After they had eaten their fill, the child was passed round among them, each one taking him in his arms and fondling him. The last to take him was Owl (snéna). As soon as he took him, he put him into his basket and stole off home with him. When the child was missed they followed Owl's trail, and after many days they came to where he abode. Now Owl was a very powerful man, and the people were afraid to go to his house. The child had now grown to a big boy, and daily went out hunting. They determined, therefore, to watch which way he went, and when he was alone to accost and reveal themselves to him. This they did, and called to him one day. When he heard himself called he stopped in his tracks, and turned sideways to see who called him. They bid him come to them, but he answers: "Not so; Owl is a very strong man, and we must fool him if I am to escape. To-morrow I will send him far off after some deer I have killed, and while he is away we must make off."

The plan was thus carried out; but when Owl was returning with the meat he noticed the boy's tracks of the day before, and wondered why he had stopped and turned sideways, and suspected that something was wrong and hastened home. Not finding the boy there he searched for his tracks, and having found them set out hastily after him.

Now not far from the Owl's house was a river which was crossed by a log.

After the boy and his friends had crossed the river by means of the log they made an arrangement with the woodworms to eat into the log so that when Owl passed over it would give way beneath him and throw him into the water. They also arranged with the crabs that when he fell into the river they would hold him down under water till he was drowned. Then they waited to see what would happen. Presently Owl came to the river, and asked them how they had got over. They say, "On the log." Owl then jumped on the log, and stamped on it to see that it was safe. They assure him it is quite safe; that they have just passed over themselves. Thinking it all right, he attempted to cross the log; but when he reached the middle it broke under him, and he was thrown into the water, where he was seized by the crabs and held under. His struggles could be seen from the bank, and for a moment his hand appeared above the water, but the crabs held him down till he was drowned. Everybody is now very glad, and they continue on their journey till they come to a lake. Now the weather was very warm, and the boy wanted to take a swim in the lake. His mother warned him not to go far out; but when he was once in the water he enjoyed it so much that he began to swim far out. They call to him to come back. He replied: "No, I don't want to; I love to swim." Presently he dived, and when he came up he was changed to a loon.

Fisher and Martin.

Teirtōps natl pépk'us sin teēoksīluq.

Fisher and Martin were brothers and lived together. Fisher was the elder and always went out hunting daily. Said he to his younger brother: "You go and hunt squirrels and chipmonks in this direction only; I will take the other." Martin did as he was told for some time. But one day he wondered why his brother had told him not to go up the hill but had instructed him always to go down. He determined to change his route and one day take the up-hill course. So one morning he set off up-hill to learn what the country was like up there. Presently he came upon a camp and was greatly surprised, not knowing that other people lived so close to them. He went forward to find out who it was who lived there. When he got inside he perceived a woman sitting down busily sewing. She invited him to sit on the opposite side of the fire. Now over the fire hung a quantity of dried meat. When he had been seated a little while she got up and stirred the fire, and then reached up and took down some of the dried meat and passed it over the fire to the boy, bidding him to eat as much as he wished. Martin now rose upon his feet and held out both his hands across the fire to take the meat. The woman thereupon grasped his hands in hers and pulled him into the fire, and held him there till his face was badly scorched, and then thrust him out of the dwelling, saying: "I don't want any of your kind visiting here." Martin lay awhile where she had thrown him, then picked himself up and went back home.

He hid himself from his elder brother between the mats of the lodge, and

when Fisher came home he was surprised to find his brother absent and no fire ready for him. He called aloud and said, "Martin, where are you?" The younger brother repeated the words softly like an echo. Fisher hearing this looked about him to see where the sound came from. "Where are you?" called he again. "Where are you?" Martin echoed back. Call and echo thus went on for some time till Fisher had located the sound and discovered his younger brother hidden between the mats and pulled him out.

He caught sight of the burnt face and knew in a moment what had happened. Said he to Martin, "Did I not warn you not to go up the hill to hunt? See what trouble your disobedience has brought upon you."

Then Fisher spat upon his brother's face and with his hands endeavoured to smooth out the skin, but many of the wrinkles remained in spite of his efforts, and thus it is that the Martin's face is creased and wrinkled to this day.

Some days later Fisher said to Martin, "We'll go and punish that woman for burning your face." So they went up the hill together to her lodge. Fisher asked the woman to come to their lodge with them; she was delighted at the offer and made ready to go at once. Presently she returned with them, and they all lived together for some time. Now she was a Deer-woman. In course of time a child was born to her. Now she was fond of swimming and bathing and had her own bathing place. Fisher instructed her never to swim far from the shore as it was dangerous. Now not far from where she used to bathe there was a log sticking up out of the water, and one day the woman thought she would swim out to this log and rest upon it. So she swam to the log and climbed upon it, forgetting the warning Fisher had given her. She had no sooner got upon the log than it sank below the water, taking her down with it.

That night when Fisher and Martin came home from their hunting they saw the woman was absent and set off to look for her. They came presently to her bathing place and found her child crying all alone on the beach. They try to comfort the child and stop its crying, but all with no effect. Finally they take it to a poplar grove near by and lay it on its back. The wind played among the leaves, moving them in such a manner as attracted the child's attention and stopped its crying. Then said Fisher to the infant, "Hereafter the young of your people will be born in a poplar grove." And thus it is that the deer always retire to the poplar groves to give birth to their young.

Fisher now said to his brother Martin, "We must go and look for my wife." So they took a white pine bark canoe and paddled along the lake for some distance till they met another canoe coming towards them. In this canoe were two fish-boys named respectively Teúktein and Nénkrutcin. Fisher asked the boys where they had come from. They replied, "From the Great Chief's house, and we are going to get some food for the Chief's new wife." When Fisher heard this he questioned the boys particularly of their mode of life, and what they did and how they lived. The boys told them of the Chief's home and how they lived and that they themselves were the wood and water gatherers, and had now become the

caretakers of the Chief's new wife. When she took her exercise in the evening they went with her so that she might not get lost or run away, and that it was their custom to leave their canoe some little distance from the shore and jump to land from it. When Fisher had gathered all the information he desired he promptly killed the two boys, stripped them of their clothing, and put it upon himself and his brother. Then they went to the camp of the Chief of the Fishes and began to perform the duties of the two fish-boys whose characters and dress they had assumed. The first time they went ashore they tied the canoe a little distance from the bank and essayed to jump ashore as the fish-boys did. Fisher landed all right but Martin jumped short and dragged one leg through the water. The Fish people, who were looking on, laughed at his mishap and said, "What is the matter with you this morning? You seem to have forgotten how to jump." Replied Martin, "I have a cramp in my leg to-day." They managed, however, to pass themselves off as the fish-boys and performed their allotted tasks without exciting suspicion. In the evening they were bidden to take the woman out for an airing. Said they to her at the first opportunity, "We are your husband and brother." "Yes," replied she, "I know; I recognised you immediately." They then planned to escape. Said the woman, "The Fish-Chief is a very powerful man and we must be careful." "I know that quite well," replied Fisher, "you only do what I instruct you and we shall beat him. You must keep him awake till midnight and then he will sleep very soundly and will not easily wake." So that night she kept the Chief from going to sleep till far into the night, and when at length he fell asleep from pure exhaustion, it became a safe and simple matter for Martin and Fisher to creep up and cut his head off without disturbing the rest of the camp. Then they stole out of the camp taking the Chief's head with them. They continued on their way without stopping for the rest of the night. At day-break the fish people awoke and presently perceived the blood and dead body of their Chief. For a time they wondered what could have happened, but when they perceived that the woman and the two boys were missing and also the Chief's head, they guessed what had occurred and set out immediately in pursuit of the fugitives. Fisher and his brother were paddling along steadily with the woman when they discovered that a large canoe was quickly overhauling them. All three set to work to paddle as hard as they could, but paddle as they would they could make no headway against the larger canoe, and the water, moreover, was getting rougher each moment and threatened to swamp their canoe. Said Fisher, "We must give up the head of the Chief or we shall be drowned or taken." With that he threw the head overboard. Immediately the water became calm and quiet, and when the pursuing canoe arrived at the spot where the head had been thrown in they stopped and tried to recover it. They selected Turtle (Arefkq) and Frog (Swáránen) to dive for it. Both dived down and remained at the bottom for some time but came back without the head. Turtle complained of the cold and said he was chilled both back and front and could not go any deeper, and Frog said he could not stand it any longer his legs were so benumbed. So the others got some paint and

some bone. With the paint they painted Frog's legs and with the bone they covered Turtle's back and front so that they could withstand the cold. Frog and Turtle then went down again and after a while returned to the surface with the Chief's head. Thus it is that the Turtle wears armour to this day and the Frog's legs are painted red.

NOTES ON SOME NIGERIAN TRIBAL MARKS.

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[WITH PLATES XXII, XXIII.]

DURING 1908 and 1909 I measured over a hundred Hausas at Jemaan Daroro (Nassarawa Province, N. Nigeria)—at least they said they were Hausas. It is almost impossible to say exactly what a Hausa is now, for he is admittedly a mixture of mixtures,¹ and the wearers of the markings given below probably represent the average of the people at present—except where the contrary is noted. Many others presented themselves for examination, but only those who could speak the language, and were able to state that both parents were Hausas, and were “passed” by some of my men were accepted. Even so, I have no doubt that the markings of some of these will show their Hausa blood to be of very recent infusion, and I trust that those who know the Hausas better than I do will be good enough to identify them, remembering, of course, that several tribes, although widely divergent in other respects, may have similar markings if these consist of a few lines only.² Nothing seems to have been done in the way of systematising the markings—at any rate not in Nigeria—and these notes are written in the faint hope of initiating the process; they are thus more likely to extract information than to impart it.

A knowledge of marks might be very useful in certain circumstances, for they often indicate a man's special qualifications as well as the tribe to which he belongs; thus a river-dweller would be able to paddle and swim, an inhabitant of the desert might know of donkey or camel transport, a Low-Filani would understand the management of cattle, a man of Jemaa possibly mat-making, and a native of Kano perhaps leather or brass work. But sometimes a noted character will try to obliterate his marks; others add special ones as charms to bring good luck, as personal ornaments, or for the purpose of relieving or preventing pain, and it is just possible that cuts made at random at first may have developed into a stereotyped pattern when successful in such an object. Others, again, may be enslaved, and, if young enough, be given the markings of the master's tribe. Lastly, smallpox may play havoc with the designs, so absolute dependence cannot be placed upon them. Still, the marks are usually a sure guide to identification.

With regard to the accompanying figures, I ought perhaps to say that the numbers in my field-book have been retained for purposes of easy reference, and also because more particulars will be published later. The outlines of the faces, etc., are not intended to represent faithfully the actual features; they are merely to

¹ See *The Niger and the West Sudan*, pp. 51-64.

² In fact, even when the lines are numerous, as is the case with the Kagoro, Moroa, Kajji and other tribes.

show the position of the marks. These have been reproduced as much like the originals as possible, even the mistakes being shown, but no attempt has been made to draw them exactly to scale. The women are mostly like No. 64.

Tribal marks generally are known by the Hausas as *zani*, they are usually mere simple cuts, but the *akanza* has blue pigment, and sometimes charcoal is rubbed in. *Keskestu* are small dots in parallel lines, *kaffo* are lines of short perpendicular cuts representing horns; other names are noted as they occur. In addition to the cuts, the women paint lines on their faces, known as *katambirri*, at times of feasts, special visits, etc., but it is doubtful if there are any strictly defined designs. Sometimes lightish coloured spots are noticed on the chest and back, called *kasbi*, which are said to appear just before puberty, and to be a sign of a lustful nature.

The lips are in most cases large and everted, but sometimes they do not "pout" so much as our own, having more an appearance as if the tips had been shaved straight across. It has not been considered necessary to state in detail where this occurred.

The nose is often like ours, but mostly broad and flat

I have occasionally noticed that the top of the head was flat, and was told that this was due to the carrying of loads in childhood—tiny mites, hardly able to toddle, are often seen with pots of water. Sometimes the forehead (and even all round the head) was very much wrinkled from the same cause. The carriers told me that anyone who carried too heavy a load for any length of time would sicken and die. I have seen several men said to be ill from this cause, and they seemed to waste away gradually, without showing visible signs of any disease.

No. 1, Awudu, had no marks. Both parents from Zaria.

No. 2, Momo, had an arrow on each side of his neck; this is very common. Straight, European features. Parents from Kano.

No. 3, Mohamma, had the first figure outside each eye, and the second (a conventionalised lizard) on each side of his neck. The latter is said to be a charm to attract prostitutes, and is called *kwanche da masoye* (sleeping with the one desired). Mohamma also had a lizard on each upper arm and rows of small cuts, *kaffo*, on his back. Both parents from Girku (Zaria).

No. 4, Alli, had a short line, *bille*,¹ on the left cheek slanting downwards from the middle of the nose, and a pattern on his chest and abdomen. Parents from Zamfara and Zaria respectively.

No. 5, Adamu, had a very much decorated face; there were five long lines on the right cheek, six on the left, the *bille* again appears, and three short cuts between each eye and the nose. The lines *yam ba(i)ki*² on each side of the mouth—are common, though the number is more often three or nine, but the catherine-wheel

¹ Also called *shatanni*.

² *Yan* or *Yam* (n changes to m before b) the plural of *da* and *dia* means "children of," "young ones of," etc., hence "children of the mouth."

(*dan taki*, "cow-pat," said to denote ownership of cattle) on each cheek is very unusual. The abdomen¹ had a pattern, *yan chikki* (stomach), of triangles. Parents from Kano.

No. 6, Abdulahi, had a succession of short lines inside five long ones on the face (and a *bille* as in 4). The triangles around the navel are hardly recognisable, and four lines are here used instead of three. Both parents from Kano.

No. 7, Alhassan, has a long line down the forehead which seems to indicate Filani blood somewhere, though the bearer denied it. The mark is not so deeply cut as with the Ijo in Southern Nigeria, and was, I was told, optional. Parents from Bauchi and Kano respectively.

No. 8, Mohamma, had a Hausa father and a Nupe mother. No marks.

No. 9, Suli, had these patterns, *kalango*, outside the eyes; that on the left (right side of head) was done early—and badly—the other shows the true form. Very straight forehead and face; hardly any lobes to ears. Both parents from Kano.

No. 10, Maïro (possibly a corruption of Miriamu or Miriam), a woman, had these behind each eye. They are very common, and are called *akanza*. Very flat nose. Parents from Zaria and Bauchi respectively.

No. 11, Kumatu, a woman, had this on each of the mammas and abdomen. These were said to be *abuiya* (friendship) marks, but I could not understand exactly what this meant. There were, no doubt, other marks beneath the navel, but as she was clothed I did not see them. Parents from Zaria and Gobir respectively.

No. 12, Ibrahim, showed a somewhat unusual pattern on the abdomen. Both parents from Kano.

No. 13, Gareba, had a *bille* on the left cheek; abdomen as here shown. Both parents from Zaria.

No. 14, Adamu, had a short straight line, *yar goshi*, down the forehead, like No. 7, but not reaching to the nose, also three *yam ba(i)ki* on each side. These *yan chikki* show the commonest pattern, except that four lines instead of three are used once on each side. Very pointed nose. Both parents from Kano.

No. 15, Gareba, was a very much "marked" man, there being fourteen lines on each cheek and fifteen on the forehead. The chest and abdomen show no triangles. There was a slight epicanthus in the left eye, and both were somewhat fish-shaped. Lower part of nose sticking straight out; very prominent lips. Both parents from Bakura.

Nos. 16–20 were not Hausas.

Nos. 21 and 22 had no marks. Eyes of 21 very narrow and slanting down towards nose; forehead straight. Features of 22 very sharp. Both parents from Takai (Kano) in the first case and from Ganza (Kano) in the second.

No. 23, Awudu, had five long lines on each cheek from high up on the head to the chin. Both parents from Buje (Kano).

¹ The black dot represents the position of the navel.

No. 24, Awudu, had three short lines between each eye and the nose like No. 5. He said that they were not tribal marks. Ears almost square but with prominent lobes. Both parents from Audil (Kano).

No. 25, Almadu, had a *yar goshi* (forehead) like No. 14. He said it was merely ornamental. Prominent chin. Both parents from Sokoto.

No. 26, Gareba, had the *bille*. Nose very short, and thick at point; very long upper lip. Both parents from Kano.

No. 27, Idi, shows a very elaborate pattern of *yam ba(i)ki*. The bearer had a Mongolian cast of features, with slanting and narrow eyes. Nose almost the same breadth all the way down. Both parents from Uti (Kano).

No. 28, Ibrahim, had three *yam ba(i)ki* and a *bille*. Front of head high and straight like a wooden post; very snub nose. Both parents from Kibia (Kano).

No. 29, Bako, had *yam ba(i)ki* and an *akanza* on each side, and also six small squares underneath and outside each eye, known as *tsuguna ka chi doiya* ("squat and eat yams"), and—as their name implies—being a charm to obtain plenty of food. Both parents from towns in Kano, Magammi and Falali respectively.

No. 30, Sambo, had two lines farther back from the mouth, and much broader than the usual *yam ba(i)ki*. Very wide span, 1908, as against a height of 1755 mm. Both parents from Daura.

No. 31, Mohammad, had two rows of four cuts outside the eye and four *yam ba(i)ki* on each side. He also had a short cut down the forehead, which, he said, was to prevent headache. The eye marks he called *daure*, and said that they had been done on reaching puberty. Upper lid of right eye quite straight, only about half of iris showing. Both parents from Dutoi (Kano).

No. 32, Ba-ka-Dauji, had three lots of three, *uku uku*, and five *yam ba(i)ki*. Both parents from Girku (Zaria).

No. 33, Usuman, had three short cuts in front of each ear and three *yam ba(i)ki*. Both parents from Kano.

No. 34, Tanko, had three cuts outside and level with each eye. Thick, hooked nose. Both parents from Bogwai (Kano).

No. 35, Awudu, a short cut from lower lip to chin, and an *akanza* on each side. Both parents from Kano.

No. 36, Gareba, had a *bille*. Very round eyes. Both parents from Arechifa (Zaria).

Nos. 37 and 38 were not Hausas.

No. 39, Gareba, had a *bille*. Snub nose. Both parents from Kumuria (Kano).

No. 40, Ahmadu, had a very thin *bille* and *yan chikki*, as shown. Very small mouth, Roman-shaped nose. Parents from Tofa and Yelwa (Kano) respectively.

No. 41, Abdu, had nine thin lines half above and half outside each eye, eight thick lines on the right cheek, six on the left and numerous small marks on the left side of the chest and abdomen, *yam bille*. There once were similar marks on the right side also in all probability, but they were too faint to be distinguished. Abdu said that the marks on the face were those of Gobir, but that his

parents came from Katsina and Sokoto respectively. Ears quite straight at the top.

No. 42, Haruna, had no marks. Both parents from Farachi (Banchi).

No. 43, Awudu, had no marks on his body, but his face showed the pattern given here. Both parents from Zaria.

No. 44, Baba, had what he called *babba goro* on the left side of the body below the waist, none on face. These, he said, were to relieve stomachache. Both parents from Zakua (Kano).

No. 45, Yaro, had no tribal marks, but nine cuts under the left nipple to relieve pain because it swelled. Very pointed nose. Both parents from Zaria.

No. 46, Mohamma, had a *kallango* outside the left eye and a long, horizontal *bille*. There is a pattern on the chest resembling that of No. 15. Both parents from Kano.

No. 47, Bello, had faint *yam ba(i)ki* and two plainer marks like No. 30 on each side of mouth, and there was a strange pattern around the navel also; one would think that the bearer had tried to obliterate his old marks by adding those of another tribe. Parents from Kano and Zaria respectively.

No. 48, Awudu, had three *yan uku uku* outside each eye. Eyes slanting slightly, and long and narrow. Both parents from Kano.

No. 49, Yusufu, had the *yar goshi* to cure headache. Very fine large eyes, like No. 14.

No. 50, Mohamma, had a number of them, very faint. Very flat face, features hardly projecting at all. Parents from Kano and Munkure in the first case, from Katsina, *i.e.*, Dokota and Madunka, in the second.

No. 51, Balla, had three lots of *yam ba(i)ki* of five lines each on both sides of the mouth; the other cuts were too numerous to count. He said that both his parents were Hausas from Kora (Kano), but that he had been caught and enslaved by Ningi people, and that they had made these marks, obliterating his own.

No. 53, Barau, had five horizontal lines on the left side of his mouth and six on the right, *kumbu*. Balloon-shaped head. Both parents from Bauchi.

No. 54, Ahmadu, had the ordinary shaped *yam ba(i)ki*, but of five lines each. Parents from Kano and Gwazo.

No. 55, Ahmadu, had no marks on the face except a *dan taki* on each cheek like No. 5, but there were four rows of cuts on his abdomen, to prevent internal bleeding, so he said. Both parents from Bauchi.

No. 56, Musa, had three lots of *yam ba(i)ki* (he, however, called them *lemu*) of five lines each, like No. 51, but no other decoration on the face. There was a pattern above the navel something like the lower half of No. 15, but it was too faint to be distinguished properly. Very high bridge to nose.

No. 57, Jibirim, had three lines outside each eye and a pattern around the navel as here shown. Very prominent forehead, head bulging to left side. Both parents from Kano.

No. 58, Umoru (a cross), had four lots of three cuts around the navel and

another above; none on face. These he said were Buzu marks, his grandfather being of that tribe. Both parents from Geso (Kano).

Nos. 59, Yusufu, and 60, Awudu, had no marks. The former had a very pointed and turned up nose; parents from Girku (Zaria) and Babeji (Kano). Awudu's parents from Zaria and Anchori (Zaria).

No. 61, Mohammad, had a *bille* and four *yam ba(i)ki*. Very fish-shaped eyes (particularly the right), and very shield-shaped head. Both parents from Birnin Kuddus (Kano).

No. 62, Musa, had no marks on the face, but there was a pattern on the abdomen very badly done. Both parents from Kura (Kano).

No. 63, Awudu, had no marks. Eyes very narrow, and inner edges pulled down showing a red line parallel with nose. Jaw very much forward. Both parents from Girku.

No. 64, Gude (wife of No. 65), had a very ornamental mouth, with even more cuts than No. 27, and there were lines beneath the lower lip, a *bille* and six rows of four above the nose. The chest and abdomen were also decorated, the pattern here showing as far as the clothes would permit. Skin extremely soft and velvety. Rear edge of ears very perpendicular¹. Both parents from Anchari (Kano).

No. 65, Balarabe,¹ had a *bille* and the usual form of *yam ba(i)ki*, but with an embroidery around it. There was a simple pattern on the abdomen. Roman-shaped nose. Both parents from Zaria.

Nos. 66 and 67, Mohammad and Umoru, had no lines on face, but some around the navel as here shown. Umoru had a face like Puck, hardly any nose, nostrils like bulldog's; lower lip so much everted that teeth showed. Both parents from Bella (Bauchi) in the first case, from Gaya (Kano) in the second.

No. 68, Aliu, had only three small perpendicular cuts about half-way between nipples and navel. Both parents from Birnin Kuddus (Kano).

No. 69, Musa, had four lines on each side resembling the *kumbu* of No. 53, but slightly lower than the mouth and called *ya taki*. European nose. Both parents from Bauchi.

No. 70, Musa, had three *yam ba(i)ki*, and also an indistinct pattern on his abdomen. Both parents from Kano.

No. 71, Ibrahim, had a *bille*. Upper lip very prominent. Both parents from Kano.

No. 72, Ibrahim, had nothing on the face, but there was a pattern on the abdomen surmounted by cuts to give relief from (?) stomachache. Upper part of ears pointed; almost diamond shaped and perpendicular; eyes very small slits. Both parents from Igabi (Zaria).

No. 73, Salifu, had a *bille* on the right side, possibly indicating good birth (it does in Gobir, I believe). Very oblong head. Parents from Kura and Ka(r)rifi (Kano) respectively.

¹ "Born on a Wednesday," not "Son of an Arab," or of a stranger.

No. 74, Kullamu—or Musa—had two rows of *uku uku* outside each eye like No. 31 but double, and *haka(r)rika(r)rin kifi* ("ribs of fish") in place of a *bille* to the right side of the nose for the purpose of attracting women. He also had *tsuguna ka ehi doiya* like No. 29. Eyes very fish-shaped; nose fairly straight, but showing nostrils. Both parents from Ringi (Kano).

No. 75, Awudu, had three short perpendicular cuts under each eye, a *bille* and three *yam ba(i)ki*. (See bottom of Plate II.) Nose 109·99. White spots (*hakia*) in pupils of eyes which are said to usually cause blindness. Parents from Tofa and Rimin Gado (Kano) respectively.

No. 76, Dawuda, had a double *kalango* on each side (see different pattern in No. 9 and a single one in No. 46), also three *yam ba(i)ki*. Upper part of head very large, left side projecting; large lobes to ears. Both parents from Zaria.

No. 77, Umoru, had five long lines down each cheek, a *bille*, and small cuts above eyes and left ear, *zubbe*. The chest and abdomen showed a pattern which is partly a conventionalised lizard apparently, and is called *zanen bangaro* (? the marks of a butcher). Both parents from Kano.

No. 78, Suli, had three rows of cuts on each side of the face between eye and ear, and four rows from nipple to navel. There were more cuts on the right than on the left side of the face, which had ten, eleven and seven in the respective rows. Under lip very large and projecting; ears diamond shaped and slanting. Nose 107·14. Parents from Kano and Kantamma (Kano) respectively.

No. 79, Musa, had three cuts outside each eye like No. 48; very flat features, but lower lip slightly prominent; nostrils showing. Both parents from Gamza (Kano).

No. 80, Musa, had almost the same as No. 77, but instead of a *bille* there was a short cut parallel to the long ones, and there were none over the ear. There were, however, three *yam ba(i)ki*. He said that these were the marks of the Wangarawa. Iris of eyes brown, with blue edges; pupils hardly visible. Both parents from Goram (Bauchi).

No. 81, Mohamma, had three *yam ba(i)ki*, and a pattern of lines in fours around the navel; short flat nose, nostrils showing. Both parents from Kano.

Nos. 82 and 83, Hassan and Awudu, had a *bille*, the latter also three *yam ba(i)ki*. Both parents from Kaura (Zamfara) in the first case, from Kano in the second.

No. 84, Gareba, had a *bille* on the right side (see No. 73), and three *yam a(i)ki*. Both parents from Kano.

No. 85, Musa, had a cut down the nose, made, so he said, by Nigawa, who caught and enslaved him. Also a double *bille* on the left side, and an *akanza* (see another shape in No. 10) outside each eye. Very straight profile, nose and upper lip slightly in advance. Parents from Takai and Falale respectively.

No. 86, Salifu, had nine *yam ba(i)ki*, and a pattern on the navel resembling, though not quite so complete as, No. 66, but better done. Profile much like No. 85. Both parents from Bauchi.

No. 87, Abubakar, had three short cuts on right side of face like No. 48, but horizontal. All other marks (if any) obliterated. Both parents from Kano.

No. 88, Husaini, had three *yam ba(i)ki* and three lots of three perpendicular cuts between the nipples, like the top row of No. 78. Both parents from Kano.

No. 89, Awudu, had a conventionalised lizard's head above his nose, and a double *bille* on the left side. Top of head very flat, through carrying a load, he says. Both parents from Kano.

No. 90, Awudu, had three broad *yam ba(i)ki* and two broad cuts running from these to the ear on each side. Above and below these were numerous cuts, also two over each eye. These were said to be the marks of the Kutumbawa. Both parents from Kano.

No. 91, Bello, had three long *yam ba(i)ki*, a *yar goshi*, and a *bille*. Point of nose and lips very prominent. Both parents from Kano.

No. 92, Ahmadu, had five long lines down the right cheek, four on the left, two short cuts over the right and left eyes respectively, and a *bille*. There is still another pattern on the abdomen. Both parents from Kano.

No. 93, Mohamma, had three *yam ba(i)ki* and a *bille*, and a simple form around the navel like No. 86, but with three lines above instead of four, and no horizontal ones. Both parents from Kano.

No. 94, Umoru, had a *bille* and (? three) long lines, almost obliterated, down each cheek. Both parents from Dutsi (Kano).

No. 95, Mohamma, had three *yam ba(i)ki*. Both parents from Fungu (Kano).

No. 96, Gareba, had a *bille*. Nasal Index 104.44. Both parents from Bebeji.

No. 97, Auta (woman), had *yar gira* (eyebrows) above each eye, which, she said, were for ornament. Both parents from Gani (Kano).

No. 98, Hassana (woman), had *yam ba(i)ki* like No. 56, but in threes (one four) instead of in fours. Very narrow and slanting eyes, Mongolian appearance. Both parents from Kano.

No. 99, Bako, had nothing on face, but a simple decoration around the navel, and irregular cuts between nipples, either badly done tribal marks or, as he said, to prevent pain. Both parents from Bebeji.

No. 100, Idi, had six lines down the right cheek, five on the left like those of No. 77, and a *bille*. The pattern on the body was similar to No. 92, except that the three outside lines on each side went straight down to meet those underneath. Rear upper end of ear goes to a point. Parents from Kano and Gwalchi (Bauchi) respectively.

No. 101, Adamu, somewhat resembled No. 80, but had two short cuts instead of a *bille* and four instead of three over the eye. Both parents from Kano.

No. 102, Buba, was much the same, but he had three pairs of *yam ba(i)ki* instead of the two inside cuts, and three over the eye. Both parents from Kano.

Nos. 103 and 104, Aliyu and Awudu, had no marks. Parents from Kano in first case, from Katsina in second.

No. 105, Umoru, had three short, perpendicular cuts above and another three below the navel, *Gobirehi*, so he said. Jewish nose. No. 106, Husaini, had six *yam ba(i)ki*. Eyes light blue, said to be due to eactus (*Kerenna*) juice, which causes blindness. Parents from Kano in each case.

No. 107, Saidu, had three short cuts under each eye and three *yam ba(i)ki*. He said that there were originally three long lines down chest and stomach, but now obliterated. Eyes narrow, inner ends of lids much turned down. Pupils bluish and irritating from *amoderre* (? a kind of blight). Both parents from Kano.

No. 108, Awudu, had three cuts outside the eyes like No. 48, and a pattern around the navel quite indistinguishable. Both parents from Albaesu (Kano).

No. 109, Mazadu, had a long cut down nose like No. 7, and a square pattern (? book) over the left nipple. Lips very prominent. Both parents from Kano.

No. 110, Aliyu, had another kind of *haka(r)rika(r)rin kifi* (see No. 74) under each eye, and four rows of cuts on the abdomen. Both parents from Bauchi.

No. 111, Mohamadu, had no marks. Head very narrow at top, very large eyes, "whites" almost brown. Both parents from Zaria.

No. 112, Awudu, was marked very much like No. 101, but there were two parts of each long line (five on left, six on right cheek), the lower being much thicker. He had three inside lines, which were made, he said, to cure sore eyes. Parents from Kano.

No. 113, Musa, was marked something like No. 90, but there were some differences. He had two short cuts over the left eye, three over the right, eight long lines above the horizontal cuts, and six underneath on the left cheek, seven and eight on the right. There was a simple pattern around the navel. Both parents from Kano.

No. 114, Iiyasu, had a very badly executed pattern on his cheeks. The lines on the chest and abdomen were longer and farther apart than usual. Fish-shaped eyes, white spot in right, which he said was through smallpox (? same as 106). Both parents from Kura (Kano).

No. 115, Ibrahim, had three short cuts over each eye, and a *bille* on the right side. Mouth and jaws more like a monkey's than a man's. Both parents from Ka-yerda (Kano).

Nos. 116 to 154 are not Hausas.

No. 155, Tanko, had a *bille* and six *yam ba(i)ki*. Eyes brown with blue edges, giving a colour like that of a brown earthenware teapot; hooked nose. Parents from Sokoto and Katsina respectively.

No. 156, Adamu, had six long lines, *zubbe*, on each cheek; no other decoration. Snub nose. Both parents from Kano.

No. 157, Barau, had no marks. Hair plastered with *shuni* (blue dye) and *mia* (butter, grease). This is very common in the case of women, but not of men. Both parents from Rimin Gaddo (Kano).

No. 158, Tanko, had no marks on the face, but had a peculiar pattern of triangles on each side of the neck, and an elaborate one on the chest and abdomen. Very prognathous. Both parents from Zaria.

Nos. 159 and 160, Mohammed and Aliyu, had six *yam ba(i)ki* on each side, the former a cut down the nose also. Head of 159 straight on right side, bulging on left; with 160 the upper part of the head was absurdly small compared to the lower. Parents from Girku (Zaria) in the first case, Kano in the second.

Nos. 161 to 360 are not Hausas.

Nos. 361 and 362, Ahmadu and Awudu, had no marks. Lips prominent in 361, nose in 362. Parents from Kano in both cases.

PHYSICAL MEASUREMENTS.

No. in series.	Nationality.	Height standing.	Height sitting.	Height kneeling.	Head length.	Head breadth.	Head circumference.	Head height.	Facial length.	Facial breadth (inter zygo).	Facial breadth (biorb).	Naso-malar breadth.	Nasal length.	Nasal breadth.	Span.	Cephalic index.	Nasal index.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Hausa	1765	890	1315	197	144	550	230	122	134	102	112	46	42	1820	73.09	91.30
2	"	1830	915	1347	198	146	557	225	111	139	103	118	51	46	1945	73.30	90.19
3	"	1875	920	1330	191	145	550	225	118	139	105	113	58	44	1960	75.90	75.58
4	"	1838	910	1349	202	149	565	228	113	135	103	114	50	45	1955	73.70	90.00
5	"	1737	880	1277	186	145	—	—	110	134	93	114	48	41	1765	77.41	85.41
6	"	1735	862	1279	195	141	547	—	116	139	104	116	54	41	1850	72.30	75.92
7	"	1670	848	1232	193	146	564	—	118	141	105	115	54	45	1712	75.64	83.33
9	"	1671	870	1232	196	144	561	228	109	133	100	112	46	42	1751	73.46	91.30
12	"	1694	863	1252	189	145	546	221	109	144	105	114	42	44	1880	76.72	104.52
13	"	1678	860	1240	199	139	558	221	121	135	106	120	54	43	1855	69.84	79.63
		17493	8818	12853	1946	1444	4998	1578	1147	1373	1026	1148	503	433	18493	741.36	807.18
14	"	1802	890	1324	193	145	551	224	119	137	106	114	50	41	1963	75.12	82.00
15	"	1685	825	1243	197	144	555	212	109	131	98	109	50	45	1891	73.09	90.00
21	"	1680	846	1262	196	142	541	208	108	134	103	110	49	42	1790	72.44	85.71
22	"	1664	820	1240	187	136	535	202	108	137	102	113	42	40	1755	72.72	95.23
23	"	1650	810	1210	180	140	525	212	112	138	106	115	51	42	1745	72.22	82.35
24	"	1689	803	1245	194	149	565	209	112	143	112	125	50	42	1812	76.80	84.00
25	"	1778	901	1318	204	153	584	224	114	140	108	123	49	48	2020	75.00	97.96
26	"	1733	862	1290	188	140	543	218	107	137	100	112	46	45	1797	74.46	97.82
27	"	1641	810	1204	190	139	540	222	119	135	98	110	44	39	1755	73.15	88.63
28	"	1751	861	1297	191	140	545	214	106	135	104	110	41	41	1914	73.29	100.00
		17073	8428	12633	1920	1428	5484	2145	1114	1367	1037	1141	472	425	18442	738.29	903.70

29	1628	819	1203	189	147	547	217	115	142	105	117	57	41	1800	77-24	71-32
30	1755	850	1280	187	138-5	539	204	107	130	104	115	47	43	1908	74-01	91-48
31	1740	879	1295	193	140	550	213	108	136	105	113	50	46	1859	72-53	81-20
32	1692	791	1236	184	140	554	210	116	136	101	113	47	44	1827	76-08	93-61
33	1720	881	1271	195	147	560	212	119	147	104	113	55	39	1899	75-38	70-90
34	1659	825	1216	185	143	534	220	116	136	103	113	49	48	1816	71-89	97-95
35	1665	832	1229	187	138	534	197	101	134	96	103	48	39	1696	73-79	81-25
36	1628	815	1210	192	135	540	211	115	127	100	110	45	44	1798	70-31	97-77
39	1752	861	1281	193	136	550	224	127	139	106	120	49	46	1878	70-41	93-87
40	1809	873	1336	200	137	558	221	119	137	104	116	53	44	1991	68-50	86-79
	17048	8426	12557	1905	1401-5	5466	2129	1143	1364	1028	1133	500	434	18472	730-14	866-74
41	1772	860	1292	192	155	564	219	119	146	103	112	49	42	1920	80-72	85-71
42	1595	814	1186	195	146	556	214	116	142	102	113	46	43	1712	74-87	93-47
43	1728	855	1263	193	140	545	200	114	138	107	119	49	43	1830	72-53	87-75
44	1592	798	1195	187	151	550	212	107-5	145	102	110	43	43	1620	80-74	100-00
45	1734	878	1276	186	139	548	209	117	136	106	115	49	48	1868	74-73	97-95
46	1650	825	1216	187	147	548	211	113	140	106	117	50	49	1763	78-61	98-00
47	1685	834	1245	196	145	552	198	104	136	100	109	45	41	1812	73-98	91-11
48	1663	788	1237	194	144	552	215	105	139	101	112	47	43	1832	74-22	91-48
49	1682	821	1238	192	142	548	201	102	140	105	115	50	45	1840	74-58	90-00
50	1637	791	1199	191	140	548	215	124	131	107	117	53	43	1828	73-29	81-13
	16738	8264	12347	1913	1449	5511	2094	1121-5	1393	1039	1139	481	440	18025	758-27	916-60

PHYSICAL MEASUREMENTS—*contd.*

No. in series.	Nationality.	Height standing.	Height sitting.	Height kneeling.	Head length.	Head breadth.	Head circumference.	Head height.	Facial length.	Facial breadth (inter zyg.)	Facial breadth (bi-orb.)	Naso-malar breadth.	Nasal length.	Nasal breadth.	Span.	Cephalic index.	Nasal index.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
51	Hausa	1640	822	1200	194	146	555	213	114	142	109	120	50	46	1743	75.25	92.00
53	"	1634	825	1190	222	160	586	216	106	150	111	120	42	43	1791	72.07	102.38
54	"	1610	823	1203	184	147	538	217	112	147	107	115	45	44	1760	79.88	97.77
55	"	1629	820	1239	184	136	535	203	109	135	101	116	49	39	1797	73.91	79.59
56	"	1738	882	1300	198	137	543	215	115	141	101	118	44	45	1845	69.19	102.27
57	"	1637	832	1215	184	140	538	203	101	134	97	105	42	45	1748	76.08	107.14
59	"	1712	835	1282	185	139	532	212	105	136	101	118	48	43	1842	75.13	89.58
60	"	1695	860	1234	193	138	540	225	113	135	102	113	43	42	1847	71.50	97.67
61	"	1705	805	1262	184	132	525	203	104	132	103	109	45	44	1800	71.73	71.56
62	"	1746	845	1294	190	136	537	218	117	142	107	114	46	43	1890	97.77	93.47
		16746	8349	12479	1918	1411	5429	2125	1096	1394	1039	1146	454	434	18063	762.51	933.43
63	"	1642	791	1210	187	141	535	213	112	142	107	115	46	43	1715	73.05	93.47
65	"	1617	849	1220	198	147	565	223	117	140	107	121	58	50	1835	68.62	75.86
66	"	1651	822	1223	181.9	138	532	213	107	130	100	109	44	44	1771	86.20	100.00
67	"	1565	782	1150	191	143	540	208	106	137	104	108	40	40	1650	74.86	76.08
68	"	1615	820	1190	184	140	529	205	106	132	94	103	48	42	1768	100.00	87.50
69	"	1685	849	1250	189	145	537	219	116	143	107	119	51	44	1855	76.71	77.90
70	"	1651	815	1229	186	145	538	209	110	136	103	115	54	45	1739	86.27	82.59
71	"	1699	872	1260	190	144	555	216	111	147	111	115	49	48	1820	75.78	76.68
72	"	1657	823	1223	193	148	558	221	114	135	100	107	53	44	1840	97.95	83.01
73	"	1822	865	1350	208	139	580	226	119	140	100	117	52	49	1960	66.84	94.23
		16604	8288	12305	1907.9	1430	5469	2153	1118	1382	1033	1129	495	449	17953	806.28	847.32

74	"	1628	820	1210	190	139	542	217	109	139	99	108	48	41	1765	73.10	85.41
75	"	1783	882	1325	205	139	573	223	109	139	108	113	44	48	1890	67.80	73.36
76	"	1646	845	1225	199	146	565	216	115	141	107	119	49	42	1985	109.99	85.71
77	"	1680	845	1245	191	140	545	211	113	143	106	116	50	37	1840	73.28	72.96
78	"	1682	825	1237	185	141	542	214	106	134	105	110	42	45	1780	74.00	107.14
79	"	1614	830	1225	187	139	531	215	114	142	108	116	43	42	1765	74.33	75.26
80	"	1700	855	1256	182	137	523	208	117	133	100	105	51	46	1765	97.67	90.19
81	"	1728	891	1301	198	137	550	222	119	139	103	110	45	41	1865	68.18	72.34
82	"	1708	880	1265	188	136	535	215	106	131	100	110	45	43	1810	91.11	95.55
83	"	1575	825	1183	183	130	520	203	111	128	92	107	50	39	1695	71.03	76.80
		16744	8498	12472	1908	1384	5429	2144	1119	1369	1028	1114	467	424	18160	800.49	834.72
84	"	1734	895	1296	194	149	558	217	117	142	99	111	49	47	1770	78.00	95.91
85	"	1730	822	1280	186	146	—	228	118	132	104	110	49	44	1855	78.49	69.00
86	"	1683	842	1237	200	138	562	196	104	140	108	118	47	43	1865	89.79	91.48
87	"	1703	860	1265	187	141	533	201	114	137	106	118	53	43	1800	75.40	77.07
88	"	1750	828	1250	198	146	570	225	111	143	115	122	43	44	1900	81.13	102.32
89	"	1750	884	1318	186	140	532	212	94	133	102	108	43	53	1840	75.21	72.77
90	"	1660	838	1244	191	139	540	211	111	134	96	104	46	37	1790	106.97	69.81
91	"	1615	808	1189	194	150	556	213	108	145	111	118	47	45	1792	77.31	73.09
92	"	1657	820	1220	197	144	560	211	109	141	101	109	49	43	1810	95.74	87.75
93	"	1620	840	1208	179	138	510	196	107	131	99	109	47	44	1790	77.09	93.61
		16902	8437	12507	1912	1431	4921	2110	1093	1378	1041	1127	473	443	18212	835.13	832.81

PHYSICAL MEASUREMENTS—*contd.*

No. in series.	Nationality.	Height standing.	Height sitting.	Height kneeling.	Head length.	Head breadth.	Head circumference.	Head height.	Facial length.	Facial breadth. (inter zygo).	Facial breadth. (biorb).	Naso-malar breadth.	Nasal length.	Nasal breadth.	Span.	Cephalic index.	Nasal index.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
94	Hausa	1760	879	1313	201	146	575	221	115	147	112	121	49	49	1905	72.63	100.00
95	"	1704	798	1258	182	138	525	199	98	137	103	110	42	45	1820	75.82	107.14
96	"	1698	820	1242	191	142	545	224	109	136	105	113	45	47	1790	74.34	104.44
99	"	1605	830	1205	184	138	531	203	98.5	132	98	109	37	43	1773	75.00	116.21
100	"	1578	781	1165	192	143	550	206	104	142	106	111	49	42	1771	74.48	85.71
101	"	1683	815	1229	182	137	520	211	105	132	98	108	42	40	1860	75.26	95.23
102	"	1684	845	1249	192	137	536	226	106	127.5	98	108	45	47	1830	71.35	104.44
103	"	1672	853	1243	188	139	537	214	105	129	100	107	46	45	1785	73.93	97.82
104	"	1698	850	1250	202	138	564	231	110	139	101	109	47	44	1911	68.31	93.61
105	"	1580	799	1170	189	138	538	219	109	132	100	110	47	45	1725	73.01	95.74
		16662	8270	12324	1903	1396	5421	2154	1059.5	1353.5	1021	1106	449	447	18170	734.13	1000.34
106	"	1630	804	1206	193	145	542	221	108	130	102	112	48	42	1830	75.12	88.54
107	"	1662	835	1240	190	139	537	214	114	137	104	109	47	44	1802	73.16	93.61
108	"	1600	791	1182	196	149	570	231	119	141	104	113	48	46	1775	76.01	95.83
109	"	1512	780	1135	188	141	542	207	109	134	100	109	47	41	1703	75.00	87.23
110	"	1621	826	1204	185	138	532	208	111	136	106	112	50	39	1806	74.59	74.00
111	"	1694	893	1265	199	152	573	223	107	144	109	125	45	46	1770	76.30	102.22
112	"	1690	891	1270	192	139	541	222	117	141	108	116	49	40	1835	72.34	81.63
113	"	1596	860	1206	195	143	550	217	114	142	107	112	43	47	1690	73.33	109.30
114	"	1705	846	1250	185	136	528	213	110	135	105	121	52	44	1840	73.51	84.61
115	"	1692	829	1250	194	143	555	219	118	133	108	119	46	43	1860	73.71	93.47
		16402	8355	12208	1917	1425	5470	2175	1127	1373	1053	1148	475	432	17911	743.07	910.44

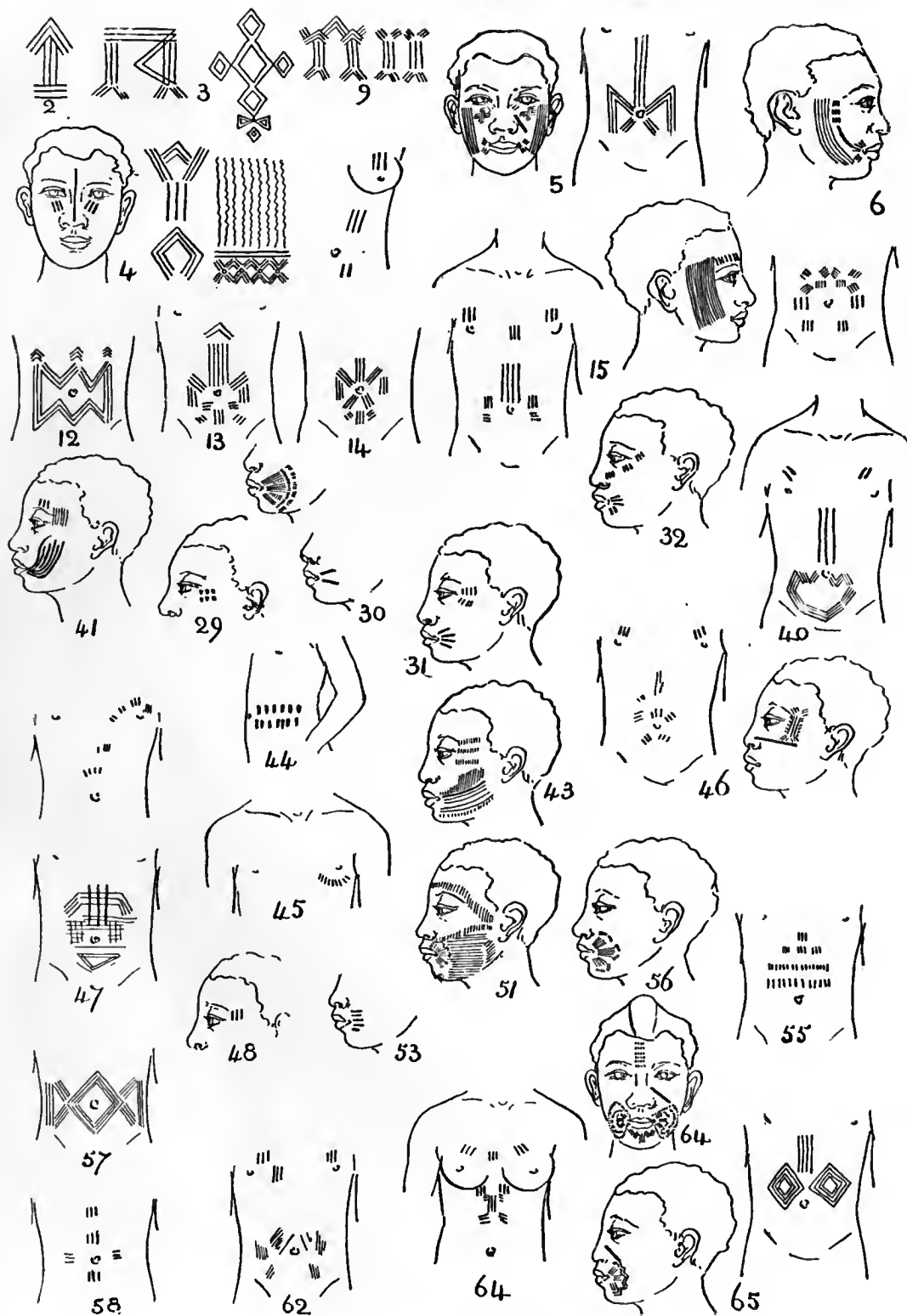
155	"	1646	832	1216	182	148	545	227	115	143	107	116	46	47	1865	81.31	102.17
156	"	1730	860	1273	191	142	545	218	105	138	108	120	45	38	1902	74.34	84.44
157	"	1678	850	1230	192	155	570	220	115	143	107	122	49	47	1820	80.72	95.91
158	"	1667	828	1238	191	142	548	223	113	143	106	118	54	42	1835	74.34	77.77
159	"	1640	845	1220	188	146	551	232	116	134	102	110	52	46	1750	77.07	88.46
160	"	1635	890	1260	193	141	555	218	108	147	110	121	45	46	1860	73.05	102.22
361	"	—	—	—	199	144	563	222	112	137	—	—	43	45	—	72.36	—
362	"	—	—	—	189	140	540	219	113	132	—	—	50	45	—	79.31	—
		10046	5105	7437	1525	1158	4417	1779	897	1117	640	707	384	556	11082	612.50	550.97

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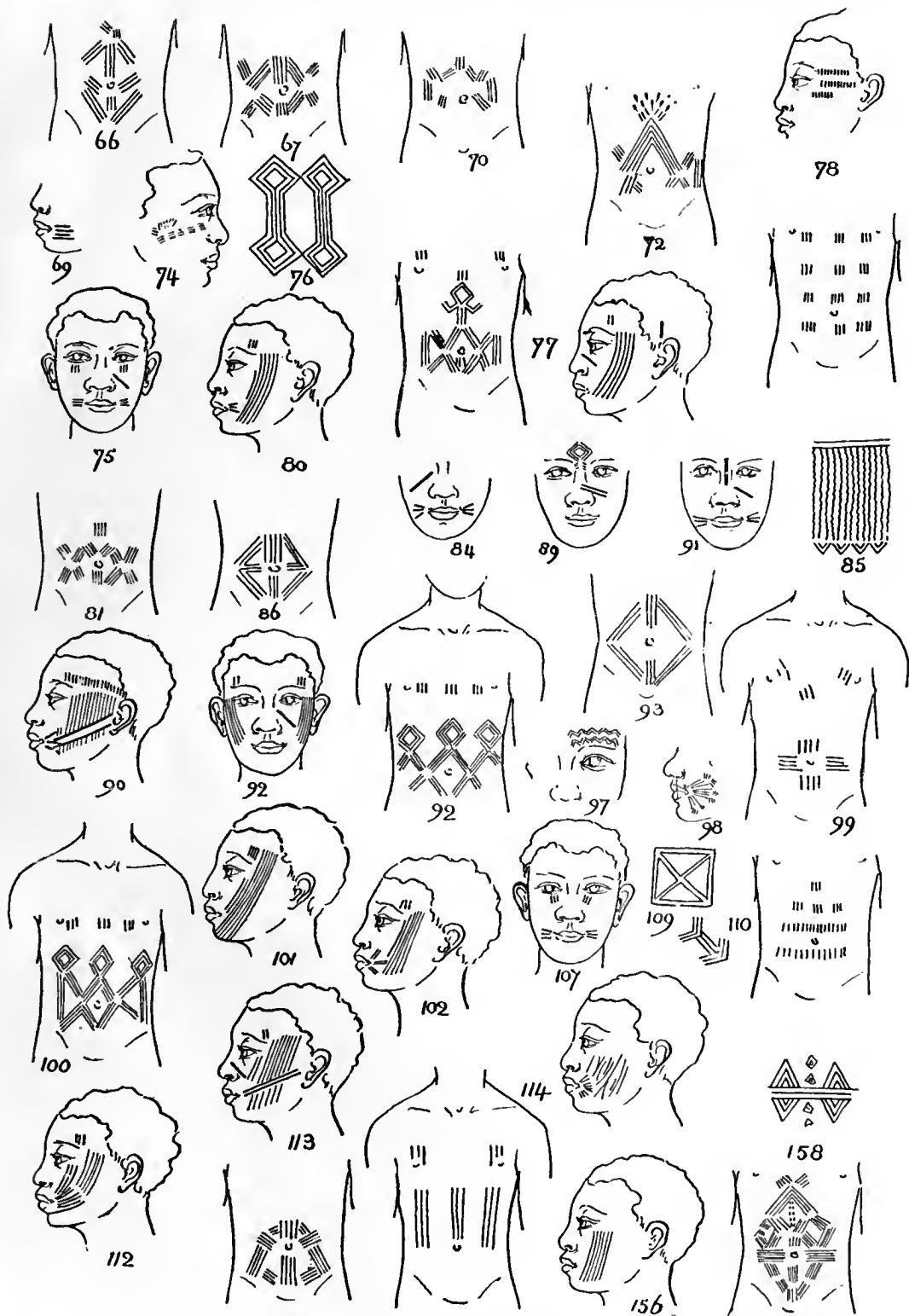
No. in series.	Nationality.		Height standing.	Height sitting.	Height kneeling.	Head length.	Head breadth.	Head circumference.	Head height.	Facial length.	Facial breadth (inter zygo).	Facial breadth (biorb).	Naso-malar breadth.	Nasal length.	Nasal breadth.	Span.
1	.	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
8	Hausa (Cross)		1670	841	—	195	141	553	222	115	134	101	116	50	43	1770
58	"		1547	784	1153	192	138	542	204	108	134	110	116	46	42	1625

N

No. in series.	Nationality.	Height standing.	Height sitting.	Height kneeling.	Head length.	Head breadth.	Head circumference.	Head height.	Facial length.	Facial breadth (inter zygo).	Facial breadth (biorb).	Naso-malar breadth.	Nasal length.	Nasal breadth.	Span.
1	2	3	4	5	6	7	8	Impossible on account of hair dressing.	10	11	12	13	14	15	16
10	Hausa (Woman)	1608	850	1198	185	139	525	9	104	137	107	118	41	32	1632
11	"	1609	790	1165	196	142	—	—	113	139	102	115	53	42	1670
64	"	1620	802	1190	180	130	—	—	102	127	102	114	43	40	1770
97	"	1510	782	1119	178	139	—	—	107	138	106	119	50	42	1716
98	"	1543	791	1159	177	133	—	—	105	131	100	107	48	42	1737
		7890	4015	5831	916	683	525		531	672	517	573	235	198	8585



SOME NIGERIAN TRIBAL MARKS.



SOME NIGERIAN TRIBAL MARKS.

A NOTE ON THE POSSIBILITY OF ANALYSING RACE MIXTURES INTO THEIR ORIGINAL ELEMENTS BY THE MENDELIAN FORMULA.

BY JOHN BROWNLEE, D.Sc.

ANTHROPOLOGY has thrown much light on the problem of race. What is still wanting, however, is a means of ascertaining even roughly to what extent different races go to make up the different inhabitants of modern countries. Analyses have been made by many authorities. Tests, such as the index of nigrescence, degree of brunetness, etc., have been proposed, but none have been found satisfactory. Again, the different scales, by which data like the colour of hair and eyes have been classified, have differed in different observers' hands. I have, in the succeeding pages, followed chiefly the observations of Dr. Beddoe. The application of a mathematical analysis to these observations suggests that these are fundamentally correct; and also that from the beginning of his work to the end he held fast to a fixed scale which had origin not merely in his own mind, but in the nature of things. Hitherto, analysis of his results has not been attempted.

In the light of Mendel's theorem of Heredity it now seems possible to make a beginning. As it is, however, only possible to make a population analysis on the basis of free mating and equal fertility, some consideration of the extent to which these can be postulated is first necessary.

The general theorem governing successive generations is very simple. Let there be at any one time two races mixing in a district. Let these consist of m persons of constitution (a, a) and n persons of constitution (b, b) where (a, a) denotes an individual having two a elements, and (a, b) and (b, b) have like meanings, then the stable population found, when mating is free and fertility equal, is easily seen to have the proportions

$$m^2 (a, a) + 2mn (a, b) + n^2 (b, b)$$

also, if at any moment the population be represented by

$$x (a, a) + z (a, b) + y (b, b)$$

of both sexes, the above proportions at once establish themselves.

Thus,

$$\begin{array}{llll} x (a, a) \text{ may mate with } x (a, a) & \text{giving } x^2 (a, a) & & \\ z (a, b) & ,, & \frac{1}{2}xz (a, a) + \frac{1}{2}xz (a, b) & \\ y (b, b) & ,, & xy (a, b) & \\ z (a, b) & ,, & ,, & x (a, a) & ,, & \frac{1}{2}xz (a, a) + \frac{1}{2}xz (a, b) & \\ & & z (a, b) & ,, & \frac{1}{4}z^2 (a, a) + \frac{1}{2}z^2 (a, b) + \frac{1}{4}z^2 (b, b) & \\ & & y (b, b) & ,, & \frac{1}{2}yz (a, b) + \frac{1}{2}yz (b, b) & \end{array}$$

and $y(b, b)$ may mate with $x(a, a)$ giving $xy(a, b)$

$$z(a, b) \quad ,, \quad \frac{1}{2}yz(a, b) + \frac{1}{2}yz(b, b)$$

$$y(b, b) \quad ,, \quad y^2(b, b)$$

Adding the population of offspring together we have

$$(x^2 + xz + \frac{1}{4}z^2)(a, a) + 2(xy + \frac{1}{2}xz + \frac{1}{2}yz + \frac{1}{4}z^2)(a, b) + (y^2 + yz + \frac{1}{4}z^2)(b, b)$$

$$\text{or } (x + \frac{1}{2}z)^2(a, a) + 2(x + \frac{1}{2}z)(y + \frac{1}{2}z)(a, b) + (y + \frac{1}{2}z)^2(b, b)$$

which has the same form as that already found.¹ The same formula is easily extended to the mixing of three or more races. If at any time, then, for any property the proportions of the population are known, the proportions of the original components can at once be ascertained if the inherited property obeys Mendel's Law.

Two methods of investigation can be employed. The character of the offspring in large numbers of definite matings may be ascertained by direct observation, or large numbers of stable populations may be taken at random. Regarding hair Davenport has written an important paper referred to later. Regarding eyes there is little information at present. Hurst² has, however, made a considerable collection of figures for eye colour in man in a district in England. From these he has found that a pigmented iris is dominant to a non-pigmented iris. He classifies eyes without pigment in the front of the iris as *simplex* and those with such pigment as *duplex*. The numbers are fairly large, referring to 139 pairs of parents and to 683 of their offspring. Unfortunately, Hurst only publishes the figures for families of more than two children, so that the exact number of each kind of parental mating and their respective fertility is not fully known. As these figures represent almost the only available material for the present purposes they are discussed in detail.

The matings are as follows :—

	No. of Matings.	No. of Offspring.	Average Family.
1. Simplex with simplex.	20	101	5.05
2. Duplex and duplex (<i>a</i>)	37	195	5.28
3. Duplex and duplex (<i>b</i>)	13	63	4.85
4. Duplex and simplex (<i>a</i>)	17	66	3.88
5. Duplex and simplex (<i>b</i>)	52	258	4.96
Totals ...	139	683	4.91

(*a*) offspring all duplex.

(*b*) offspring mixed.

¹ This formula was first given by Mr. G. H. Hardy in *Science*, N.S., vol. xxviii, July 10, 1908.

² "Inheritance of Eye Colour in Man"; *Proc. Roy. Soc.*, vol. 80, B, p. 85

With groups 1, 2, 3 and 5 the fertility is almost constant. In group 4 it is markedly less and the deviation from the average is much more than might be expected. In default of further evidence to the contrary, however, it may be taken as probable that equal fertility exists.

It falls next to be considered whether the parental mating is random or not. Let the simplex type be denoted by (a, a) , the complete duplex by (b, b) , and the free mating population by

$$x^2 (a, a) + 2xy (a, b) + y^2 (b, b)$$

The matings are then as follows :—

$$(a) \text{ Simplex and Simplex } x^4 = 20$$

$$(b) \text{ Duplex mating Simplex } 2x^2 (2xy + y^2) = 69$$

$$(c) \text{ Duplex mating Duplex } (2xy + y^2)^2 = 50$$

Solutions of these equations giving approximate values of x and y are,

$$x = 2.15$$

$$y = 1.284$$

This gives for the value of (a) 21.4 against 20

$$(b) 66.3 \quad \text{,,} \quad 69$$

$$(c) 51.4 \quad \text{,,} \quad 50$$

numbers showing a very good correspondence.

It may be said, therefore, that there is no evidence of special choice of one parent by another because of the colour of the eyes. This is in accord with Galton's records, where the coefficient of assortive mating with regard to eye colour is given by $r = .1 \pm .04$.¹

The next point requiring consideration is the stability of the population. As can be ascertained from Hurst's statistics the number of each type among parents and offspring is as follows :—

PARENTS.					
				Duplex.	Simplex.
Group (1)	..	...			40
„ (2)	...	...		74	
„ (3)	...	...		26	
„ (4)	...	...		17	17
„ (5)	...	...		52	52
Totals				169	109
Percentage of total				60.8	39.2

¹ Pearson, *Phil. Trans.*, vol. 195, A, 1901.

OFFSPRING.

	Duplex.	Simplex.
Group (1)		101
„ (2)	195	
„ (3)	45	18
„ (4)	66	
„ (5)	121	137
Total ...	427	256
Percentage of total	62·5	37·5

In other words, the population is sensibly stable.

The question of equal fertility may be studied from another side. If we take the different parishes in the same counties in Scotland in which there are great differences of hair colour, we get populations living essentially under the same conditions of weather and food. The fishing towns of Fife provide a good example. In Largo and Newburn the percentage of fair-haired children is 49·9,¹ in Crail, Pittenweem and Anstruther 18·9. From the census the number and ages of the married women between 15 and 45 years of age is known. The relative fertility of married women of each age is also known, so that a comparative number can be calculated for each place. In the two groups of parishes above referred to this comparative figure is the same, so that the fertility of the districts is obtained by dividing the number of legitimate births by the number of married women of child-bearing ages. This for Largo and Newburn is ·230, and for Crail, Anstruther and Pittenweem ·264, a difference slightly in favour of the latter parishes. The same process has been applied to the darker and lighter portions of Sutherlandshire. Dornoch, Golspie and Creich, with a proportion of 20 per cent. of fair-haired children, have a fertility rate of ·268, and Durness and Farr, with a proportion of 36 per cent. of fair-haired children, a fertility rate of ·266, when due correction is made for the different ages of the married women—rates approximately equal. The number of births in the former group is 472 as against 325 in the latter. When the parish of Tongue, however, which lies between Durness and Farr, is examined, it is found that here the fertility figure is ·311, considerably higher than that of either of its neighbours. The number of fair-haired children in this parish is only 19·6. It

would thus seem that the darker-haired population may be at present slightly more fertile than the lighter portion. That this difference is permanent in view of the history of race migrations is, however, exceedingly unlikely,¹ nor is it of sufficient amount to interfere with the subsequent analysis given in this paper so far as present conditions are concerned.

Having, as a preliminary, examined the only direct evidence which I can find regarding how far the conditions are such as to justify the use of Mendel's hypothesis as a basis of race analysis, the special problem may be approached. Modern anthropologists seem to be agreed that the present populations of Europe are in the main the descendants of three more or less pure races. These three races are described by Prof. Ripley as (1) the Teutonic race, blond, blue eyed, tall and dolichocephalic; (2) the Alpine, with brownish hair, grey or hazel eyes, short in stature, and brachycephalic; and (3) the Mediterranean race, dark haired, dark eyed, short in stature, and dolichocephalic. It seems proved by archæology that the Mediterranean race was at one time the sole inhabitant of the British Isles. Archæology also shows an invasion of a broad-headed race of medium height at a later date, which, except for stature, seems to approach Prof. Ripley's Alpine race.² The invasion of the tall, fair northern races is a matter of history, and they come in successive waves as Saxons, Angles, Danes and Northmen. None of these races seem to have come in absolute purity. Local names in England suggest the presence of Wends, etc., but the dilution in the main is from others of the three races, and therefore does not affect, except secondarily, the constitution of the present inhabitants of the British Isles. These races survive in the British Isles in varying numbers in different places. Inter-marriage has long been probably free, not for the country as a whole, but for each different locality. One influence alone checks the intermixture, and that is religion. Wherever Roman Catholic and Protestant inhabit the same valley they seem to have kept themselves more or less apart, and slightly different types have developed within the same region.

As has been shown earlier a free mating population becomes stable on a Mendelian hypothesis in one generation. One generation can hardly have sufficed in most places, but during the last few centuries many generations are possible, and it is probable that during that time in each locality, especially in the country, free inter-marriage has taken place. Towns afford an exception. Immigration into these has been so marked in the last sixty years that there is not yet time for the production of a homogeneous race mixture, and in these centres especially, religion has proved a bar to free inter-marriage.

For the analysis of the population it is necessary to have an accurate knowledge of the nature of the hybrids. With regard to hair the evidences seem direct: fair hair is recessive to red, medium and black in the sense that the latter destroy the quality of fairness, though, even in this sense, in many cases it is only

¹ Cf. Brownlee, "Germinal Vitality," *Trans. Roy. Phil. Soc., Glasgow*. Vol. XXXIX pp. 180-204.

² Certain authorities are in favour of the invasion by two different broad-headed races.

recessive as age advances. In the case of jet black hair I have no doubt from observation that such a person is a true black, *i.e.*, both elements of the Zygote are of that constitution. Dark-haired persons contain only one black element, the other may be of medium, red, or fair-haired constitution, so that black is imperfectly dominant. In the same way fair-haired persons are pure as regard hair colour and contain two similar elements. Red hair is also recessive to medium and black as age advances. Red hair, however, cannot be considered apart from medium hair, as many persons are classed as red who are really hybrid between red and medium, and have the same kind of pigment granules in their hair as are seen in the medium hairs. These persons have deep red hair. In other cases the medium element determines the colour. These facts seem to explain all the diverse colours of hair occurring among parents and offspring which I have directly observed.

These results were obtained by direct personal observation in ignorance of the paper on "Heredity of Hair Colour in Man," by Davenport, published in *American Science* for April, 1909. His results and mine are in essential agreement. Thus he says (p. 206):—

"All results are in accord with the statement that red and black contribute two independent series: that red is dominant over no red, as the deeper shades of melanic pigment are dominant over the lighter; and that the dense granular melanic pigment tends to hide the diffuse pigment."

I go further, however, in distinguishing two distinct racial types of melanic pigment, the black and the brown, the former of Mediterranean and the latter of Alpine origin. I think so far as my observations go, though I cannot say definitely at present, that these are distinct pigments.¹ Jet black mating with jet black gives only jet black children, as I have seen in some Italian families in Glasgow. Of this, Davenport gives no typical case, evidently classing as dark both the dark and jet black of Beddoe. I think the analysis of this communication bears out this contention.

Eyes are more difficult. There would seem to be at least four eye pigments in the iris: (1) the dark pigment which lines the posterior surface of the iris and which is present in all eyes except those of albinos. Eyes of this type are pure blue in childhood, though later on they may become more or less grey. (2) A pale yellow or grey pigment present in the anterior layers of this iris. This gives colour of grey to pale yellow.² (3) A darker yellow pigment present in the anterior layers of the iris which gives a range of eye colour from yellow when pure to green when mixed according as to the arrangement of the particles. (4) A dark chocolate pigment also present in the anterior layer of the iris which gives dark eyes and when mixed with pale yellow or yellow numerous intermediate shades. The amount of these pigments and the degree of mixture varies in different eyes and thus great gradations of colour are produced.

¹ See Note at end of paper.

² I have seen this pigment very markedly present in the eyes of an albino.

METHODS OF ANALYSIS.

Let there be originally the following proportions in a mixture of three races :—

$$x (a, a) + y (b, b) + z (c, c)$$

when (a, a) represents fair hair, (b, b) medium hair, (c, c) jet black hair.

Then the stable population is given by,

$$x^2 (a, a) + 2xy (a, b) + y^2 (b, b) + 2yz (b, c) + z^2 (c, c) + 2xy (a, c)$$

Hence

$$x^2 (a, a) \text{ possess fair hair.}$$

$$2xy (a, b) + y^2 (b, b) \quad ,, \quad \text{medium hair.}$$

$$2yz (b, c) + 2xz (a, c) + z^2 (c, c) \quad ,, \quad \text{dark or black hair.}$$

To obtain the value of x all that is necessary is to extract the square root of the numbers of fair-haired persons. Comparison with the square root of the total number of persons examined will give the percentage of persons of (a, a) constitution originally present in the population. Thus 25 per cent. of the inhabitants of Shetland are fair-haired. The root of 25 is 5, and of 100 is 10, so that originally 50 per cent. of the population may be taken to be of Teutonic origin. Owing to the dominance of colour over lack of colour, a half of the race constitution is here obscured. In the same way, we can take the group of fair, medium and red hair :—

$$x^2 (a, a) + 2xy (a, b) + y^2 (b, b)$$

Write this with a new symbolism (a, a)

and the population becomes

$$(x + y)^2 (a, a) + 2(x + y) z (a, c) + z^2 (c, c)$$

If we now extract the square root of the first term and subtract the value obtained from that of the square root of the total number of persons examined, we evidently get the value of z . For the root of the total is $x + y + z$ and that of the first term $x + y$, the difference of which is z . We are thus in a position to test our analysis; finding z by this means and squaring, we should, as before indicated, obtain the number of persons with jet black hair. This I propose to prove is the ease. The other methods are all similar uses of the trinomial $(x + y + z)^2$. As there are no cases considered such as those of albino mice, Cuenot's hypothesis is not required.¹

MENDELIAN DISTRIBUTION OF JET BLACK HAIR.

Jet black hair seems to be derived from the original Mediterranean race which was distributed from Britain to the Eastern Mediterranean. In this variety of hair the pigment is contained chiefly in the form of large granules distributed throughout the hair. Dark hairs have these granules but not to the same extent, and they are much smaller in medium hair, and often quite absent in red and blond hair, which contain their pigment in a diffused and not granular form. Beddoe in his original use of the index of nigrescence counts each jet-black-haired person as two on account of the excess of pigment. This seems just in view of the present analysis of his figures. The method of fitting the theory and testing

¹ *Arch. Zool. exp. et gèn. Notes et Revue*, 1904.

the result has in general been carried out as follows. Let 100 be the actual total number of persons, x^2 the percentage of blond, red and medium haired combined and we have :—

$$\begin{aligned} x^2 &= \text{percentage blond, red or medium haired.} \\ 2x(10 - x) &= \text{,, dark haired.} \\ (10 - x)^2 &= \text{,, jet black haired.} \\ \text{Total } 100. \end{aligned}$$

We thus extract the square root of the percentage of lighter haired persons, subtract that from 10 and square. This should give the number of persons with jet black hair.

Example.—Manchester: Persons examined, 475.

Red hair	6	per cent.
Fair hair	16·5	„
Brown hair	39·1	„
Dark hair... ..	33·2	„
Jet black	5·1	„
Total light-haired persons $x^2 = 61·6$		
$\therefore x = 7·82$		
and $10 - x = 2·18$		
$\therefore (10 - x)^2 = 4·75$		

That is, the number of jet-black-haired persons predicted from knowing the percentage of light-haired persons is 4·75 as against 5·1, or in actual numbers 22·3 as against 24.¹ This gives an exceedingly good fit.

The test of goodness of fit in a series of values² such as this is obtained by taking the differences of the theoretical and the actual values (the numbers of persons being used and not the percentages), squaring these and dividing each difference by the corresponding number. This sum is denoted by χ^2 and the probability of the fit by P. In the case of three classes $P = e^{-\frac{1}{2}\chi^2}$ The working out of the present example is as follows :—

Actual Numbers.	Theoretical Numbers.	Difference.
Black hair 24 ...	22·3	− 1·7
Dark hair 153 ...	154·7	+ 1·7
Medium, red and blond hair 298 ...	298	0

¹ It is to be noted that the dark group should be increased or diminished by the same amount as the black group is in defect or excess.

² “On the Criterion that a given system of Deviations from the Probable in the case of a Correlated system of Variables is such that it can reasonably be supposed to have arisen from

$$\begin{aligned}\text{so that } \chi &= \frac{(1.7)^2}{22.3} + \frac{(1.7)^2}{154.7} \\ &= .129 + .019 \\ &= .148 \\ \therefore P &= e^{-.074} \\ &= .939\end{aligned}$$

or, in other words, more divergence of fact from theory would be obtained in 939 trials out of 1,000 made. The fit is therefore excellent. It should not, however, be expected that a town will give a good fit. The result is more or less accidental. Nor will a large area. The essential of the theory is that there is free mating.

Country districts with uniform religions, classes such as farmers in a district, towns with large resident fisher class, etc., should give the best fits; and these do. On the other hand, places where immigration has brought together a heterogeneous mass will not, except accidentally, give a good fit. Districts with two religions show the same, and towns where two religions and immigration both exist will give very bad fits. The middle classes and the artizan classes in towns should give the best fits, for the upper classes move more about and marry from different places, while the slum of a great city does not maintain itself, but is constantly being recruited from outside. Neither therefore fulfils the categories. As an example of this Edinburgh may be taken. Dr. Beddow's figures are as follows, the theoretical fitting being given for comparison:—

	Number.	Light Hair.	Dark hair.	Jet Black Hair.	
				Actual.	Theoretical.
(1) Edinburgh streets, mixed classes	2,000	63	30.5	6.5	4.24
(2) " " lower classes	1,000	61.2	32.4	5.7	4.75
(3) " " Canongate, lower Scotch and Irish ...	650	58.5	32.0	9.5	5.56
(4) Cowgate, purely Irish ...	300	56.6	32.7	11.1	6.15

None of these are good fits. That of class (2), the lower classes, is the best fit, that of the whole town less good, that of the immigrant Irish worse still, and that of the mixed Scotch and Irish worst of all. This is exactly what *à priori* is expected. As a further example Bristol may be taken. It is the city in which Dr. Beddow did his chief work. The figures are as follows:—

Random Sampling."—K. Pearson, *Phil. Mag.*, vol. L, pp. 157–175, July, 1900. "Tables for testing the goodness of Fit of Theory to Observation."—W. Palin Elderton, *Biometrika*, vol. I, p. 155.

	Number.	Light Hair.	Dark Hair.	Jet Black Hair.	
				Actual.	Theoretical.
Bristol, whole city	5,000	57.4	38.4	4.2	5.8
Middle class males	300	60.0	33.9	5.6	5.1
" " females	300	59.5	58.5	2	5.2
Upper " males	200	60.3	35.7	3.9	5.1
" " females (including Bath, etc.)	400	59.1	39.6	2.3	5.2
Young people on Whit Monday in Bristol	500	57.8	37.5	4.9	5.8
Welsh Congregation	100	48	46.5	5.5	9.4

Here we have for the city as a whole much the same approximation as for Edinburgh: for the middle class males a very good fit, and nearly as good for the upper class males. The females in the same classes show the same amount of divergence, but as the proportion of light hair amongst them is the same as amongst the males the divergence suggests that jet black hair among women might not in Dr. Beddoe's time be popular on account of some fashion. With the young people out on Whit Monday the approximation is also good. The figures obtained by observing a Welsh Congregation recall those found in the Cowgate in Edinburgh. An immigrant group cannot be expected to show any correspondence with the theory.

Other special instances will now be considered. The best results might be expected in such instances as farmers in the same district. The local market days provide a medium of intercourse likely to result in free marriage. In twenty-two instances Dr. Beddoe specifies that he is dealing with such a population. In sixteen of these χ^2 is less than unity, in four > 1 and < 2 , and in two > 2 and < 3 . The proportions which chance would allot if the theory were true are compared in the following table:—

χ^2	Theoretical.	Actual.	Districts (Dr. Beddoe's numbers).
0 — 1	8.6	16	38, 72, 89, 94, 112, 122, 125, 133, 162, 170, 175, 191, 227, 230, 242, 245.
1 — 2	5.3	4	196, 202, 241, 276.
2 — 3	3.2	2	102, 212.
3 —	4.9		
Total	22	22	

The chances are thus immensely in favour of the actual groupings fulfilling the theoretical conditions. In the same way groupings which are accidental and infrequent should give very bad fits, *e.g.*, a regatta, where many classes mix merely on one special occasion and not regularly as on a market day. It is not necessary to particularise to the same extent as in the last case: examples are given in the following table:—

Dr. Beddoe's Reference No.	Place.	Occasion.	No. of Individuals.	χ^2
224	Norwich.	Assizes and Regatta.	290	2.64
225	Yarmouth.	Regatta Day.	450	9.48
226	„	Sailors and Policemen (not local).	100	4
274	St. Austell.	Flower Show.	850	2.2
160	Ripon.	Excursionists.	150	4.4

Of these examples perhaps the St. Austell flower show should not be included, the large value of χ^2 depending on the large number of persons observed. The percentage of jet black persons is in the theory 11.5 against 10.2 found, a difference which really does not necessarily mean more than some slight local divergence of type among those collected from all directions of a country side to an event in the neighbourhood.

The complete figures are distributed in the following manner. In all 232 of Dr. Beddoe's observations have been analysed. The results are divided into two sets, the large towns and the country districts, arranged according to the value of χ^2 and classified in the adjoining table:—

χ^2					0 — 1	1 — 2	2 — 3	3 —	Total.
Towns	...	...	...	...	16	12	17	18	63
Country Districts	...	...	...	...	125	21	12	11	169
Total	...	...	...	...	141	33	29	29	232

It is to be noticed at once that the towns show no grouping which specially suggests that the law of distribution of hair colour has been more than approached. The country districts, however, show that the law has a very high probability. With

regard to the towns, if sixty-three trials were made at random the grouping seen in the table would arise.

χ^2	0 — 1	1 — 2	2 — 3	3 —	Total.
Actual	16	12	17	18	63
Theoretical	24·8	15·0	9·2	14·0	63

The number of cases with high values of χ^2 is thus excessive, or the factors interfering with the law are very considerable. With the country districts a quite different result is seen. Here the comparison is as follows:—

χ^2	0 — 1	1 — 2	2 — 3	3 —	Total.
Actual	125	21	12	11	169
Theoretical	66·5	40·4	24·4	37·7	169

In other words, it is in the very highest degree probable that the assumed law represents the real factor. The large number of small values of χ^2 also suggests that Dr. Beddow's figures represent large samples of the respective populations from which they are drawn. It would thus seem that the explanation offered holds for the British Isles. The Continent provides yet another test. Dr. Beddow made many observations in Germany, Switzerland, Italy, and the Low Countries: in these variation takes place from extreme lightness in the north to extreme darkness in the south. Calculations have been made from many of Dr. Beddow's figures, and these are given in the accompanying table. It is found that on the Continent the cities give a much better fit than in this country. In two cases, Heidelberg and Genoa, the divergence is extreme, but this out of the twenty-five cases tabulated is not a great number. Even Vienna, where 1,700 persons were examined, does not show a great divergence. This suggests that no factor such as the large immigration of Irish into the British cities enters into play into the continental towns. It is to be noted again that, when peasants are considered, the fit is very good—in other words, free mating is more nearly obtained. The correspondence of fact and theory is therefore very close, and as the percentage of jet black varies from one to fifty the theory seems sufficiently elastic.

	Number.	Percentage of Jet Black Hair.		χ^2
		Actual.	Theoretical.	
Basel	133	3.7	5.1	.75
Zurich	143	3.5	5.2	.85
Berne	150	2.7	3.6	.44
Ilanz, Truns and Disentis	123	15.5	15.9	.025
Friesland	300	.17	.40	.42
Munster	150	1.00	1.16	.04
„ peasants	150	.34	.61	.30
Eisenach „	150	3.33	2.38	.63
Heidelberg	115	3.9	7.56	very large
Köln	300	6	4.9	.80
„ peasants	171	1.17	1.55	.17
Aix-la-Chapelle	300	6.67	5.03	1.89
„ „ peasants... ..	250	3.60	2.40	1.64
Dusseldorf peasants	200	1.00	1.36	.19
Treves peasants	250	4.8	5.7	.44
Berlin	300	4.2	5.3	1.48
Dresden	250	2.4	3.9	1.36
Vienna	1,700	4.97	6.15	1.0
Genoa	450	22.1	27.4	5.24
Florence	134	24.9	28.1	.73
Tivoli	139	43.6	47.4	.52
Prague	250	5.2	7.0	1.48
„ peasants	200	4.3	4.1	.017
Czechs	218	11.2	8.4	2.44
Salerno and Pesto	254	35.6	37.6	.2
Between Terracina and Naples including Mola	280	19.0	20.8	.875

DISCUSSION OF THE FAIR-HAIRED PORTION OF THE POPULATION.

If jet black hair segregates according to Mendel's law so does fair hair. Black hair as we have shown is an imperfect dominant, the combination of a black element with a fair or medium element resulting in dark and not jet black hair. The square root of the number of jet-black-haired persons when compared with the square root of the total number of persons thus gives the proportion in the original population. In like manner the proportion of fair-haired persons in the original population may be ascertained. One fact of importance here emerges. Fair hair and blue eyes are linked together in the pure Teutonic race. In consequence the number of adults with fair hair should equal those with blue eyes, as

both are recessive to hair and eyes containing pigment. Dr. Beddoe unfortunately does not distinguish blue from light eyes, so that direct verification cannot be obtained. Some indirect verification comes from Dr. Tocher's pigmentation survey of the school children in Scotland.

Children with blue eyes must essentially be those without any pigment. Some with slight pigment will undoubtedly be included, but also some grey blue eyes containing no pigment will be included in the light class. In the following table percentages of fair hair and blue eyes are given as far as Dr. Beddoe's and Dr. Tocher's statistics enable them to be ascertained. The groups of the former in the counties are added together where the observations seem sufficient, and compared with the result of the school survey. The results are as follows:—

	Fair Haired. ¹	Blue Eyed. ²
Shetland	22·6	25·8
Orkney	17·4	17·5
Skye	18·1	19·4
Wick	16·6	13·2
Aberdeen county	17·5	16·85
„ city	17·	12·8
Angus	16·5	15·7
Stirling town	19·3	10·7
Perth town	17·8	12·2
„ county	17·3	16·0
Ayr town	17·6	17·6
Edinburgh town	16·5	15·11
Coast of Fife	19·25	14·66
Galashiels	16·6	15·5
Peebles	19·9	4·3 (light eyes 43·0)
Jedburgh and Kelso	18·7	20·7
Selkirkshire	21·6	18·1

The chief correspondence is in county districts. Considering that thirty years passed between the surveys it is very good. The towns form the chief exceptions, Perth, Stirling, Aberdeen, Wick and Edinburgh. Peebles also falls here, but it is evident that the personal equation of the observer is very different from that of his fellows: 4·3 per cent. of blue eyes being much too small, especially as the

¹ Dr. Beddoe's *Races of Britain*.

² *Survey of Scottish School Children*, Tocher.

number of light eyes is given at 43 per cent. The towns affected have all greatly increased by immigration in the last thirty years, and this factor must be taken into account, though it is not probably the whole explanation. These figures may then be taken as affording confirmation of the general theories here set forth and lending support to the idea that a Mendelian analysis is possible.

Red hair alone remains to be considered. I incline to the belief that red hair and medium hair are somehow associated, or in other words that red is a variety of medium hair. The evidence is not very conclusive. When analysis is made of the population by the previous method no definite relationship can be made out between red and any other colour, but all analysis is vitiated by the fact that many persons classed red are a mixture of red and medium so that the total original red element cannot be ascertained. There is a table, however, of the connection of hair and eye colour given by Tocher (*Biometrika*, vol. vi, p. 224), which when reduced to percentages is as follows :—

Percentages of persons of definite hair colour possessing blue eyes, etc.

	Fair Hair.	Red Hair.	Medium Hair.	Dark Hair.	Jet Black Hair.
Blue eyes	22·4	11·8	10·8	7·1	·7
Light eyes	46·1	36·6	29·8	17·4	6·7
Medium eyes	24·3	32·5	39·6	32·6	21·6
Dark eyes	7·4	18·9	19·9	42·9	70·9

When this table is examined it is seen at once that the affinity between hair and eyes is very similar for red- and medium-haired persons, while that of persons with fair, dark or jet black hair is quite diverse. Other points suggest themselves, such as that the red area of Scotland is also more brachycephalic, etc., but the differences in these cases are not sufficient to make any distinction of much value.

This I find is in accord with what Mr. J. Gray¹ has obtained by a quite different method. Examining hair with a tintometer he has come to the conclusion that red hair is probably evolved from dark brown by converting a certain percentage of its black pigment into orange pigment. I suggest, however, that it is the medium pigment which suffers this change.

It is now necessary to inquire how far any of these original immigrant races survive *in toto*. Anthropologists are fond of asserting that in such and such a district types persist.

I do not think that any type survives anywhere. If we take the four factors which have before been specified, height, cephalic index, hair colour and eye colour, we have thirty-six combinations, so that in one instance out of thirty-six a type will reappear. But that is merely as regards these four qualities; every extra quality

¹ "A New Instrument for Determining the Colour of the Hair, Eyes and Skin," by J. Gray, B.Sc. *Man*, April, 1908.

demand makes the number of persons possessing all, smaller and smaller. In addition as regards the whole of the internal economy anthropology is silent, and to say for instance that a short, broad-headed, medium-haired, and medium-eyed person is a member of the Alpine race is surely superficial. The best data on which to settle this question are the asylum data reduced by Tocher (*Biometrika*, vol. v). I have separated from these tables combinations of different types of hair and eyes and compared them with the stature and cephalic index. I find that no colour of hair and eyes either singly or in combination has a stature or a cephalic index different from the mean of the population. In other words all inhabitants of the Scottish asylums, who are presumably so far a sample of the Scottish, are "hopeless mongrels" made up of diverse elements derived indiscriminately from the races which originally peopled the islands. A summary of the means of some instances are given in the following table:—

ARGYLL ASYLUM.

	Mean stature inches.	Mean cephalic index.
Medium hair and medium eyes ...	67.5 \pm .86	76.99
Medium hair and light eyes ...	67.1 \pm .2	76.9
All inmates	66.8 \pm .14	76.8 \pm .13

MONTROSE ASYLUM.

	Mean stature inches.	Mean cephalic index.
Fair hair and light eyes ...	66.7	77.8
All inmates	66.3 \pm .11	78.3 \pm .12

ALL SCOTLAND.

	Stature.	Cephalic index.	Ratio of head height to head length.
Fair hair and light eyes	65.3	77.2	
Red hair and any eyes ¹ ...	67.2	77.4	71.0
Dark hair and dark eyes	66.2	77.6	
All Scotland	65.9 \pm .03	77.6 \pm .03	70.3 \pm .03

¹ Each colour of eye was calculated separately and no difference found.

It is thus at once evident that no colour of hair or eye, either singly or in combination, can be taken as any guide of the racial constitution of any individual. For each district the mean of that district for stature and head form is the mean of all classes in the district. For an anthropologist to talk of the survival of types is therefore to be a day behind the fair. There are only local mixtures. Neither asylum data nor observations on children are sufficient to test these. It is, however, interesting to compare the asylum statistics of cephalic index with those of Dr. Beddoe as analysed in this paper. As the medium race was originally the most round-headed, those districts in which it survives to the greatest extent should still be the most broad-headed, and that is to some extent the case. Thus Argyllshire with a cephalic index of 76·5 has a proportion of its population of 36 per cent. derived from the round-headed race, while the north-east with a cephalic index of 78·5 has a proportion of 42 per cent. The other districts come between without regard to order. This, however, is open to great fallacy. Many migrations have taken place in the islands, and, as we have seen, rapid dissociation of head form and stature may take place.

After these observations there should be little difficulty in determining the probability of the methods applied. It would seem that Dr. Beddoe's statistics are least comparable among themselves; and, in addition, it appears most probable that the categories he has adopted represent real differences—in other words that he has by direct observation made an unconscious Mendelian analysis. Such a finding demands that Dr. Beddoe be given the credit due to rare powers of observation.

I append a complete analysis of Dr. Beddoe's observations for Scotland, with a few exceptions such as Glasgow where the numbers are very small and some other places where the total persons observed are under 100. Some sub-districts have also been omitted where the total for a larger district includes them. If, however, two adjacent regions when grouped together do not satisfy the criterion when one alone satisfies it, both results are given. Comrie and St. Fillans, numbers 39 and 40, show this. It is an indication of want of free marriage.

Few remarks are necessary on the table. Remarkably little difference exists between the highlander and the lowlander. The land of the mountain and the flood is thus made more responsible for the psychical differences of the highlander and the lowlander than the difference of race origin. Early environment tells more than lineage in determining the mental aspect towards the universe. As might be expected, the northern islands and the coast of Berwickshire show a large proportion of the Teutonic races, and some of the inland highland valleys of the Mediterranean races. The differences in the latter range from 15 to 30 per cent., but nowhere is there any indication that any large tract of country is fundamentally different from the average of the country as a whole.

TABLE GIVING THE PROBABLE PERCENTAGE COMPOSITION OF THE POPULATION IN DIFFERENT DISTRICTS IN SCOTLAND BASED ON THE OBSERVATION OF DR. BEDDOE.

No.	District.	No. of Ob- servations.	Teutonic Race.	Alpine Race.	Mediterranean Race.		χ^2
					(a)	(b)	
<i>The Isles.</i>							
1	Shetland (Lerwick, Scal- way Sound, etc.)	285	48·6	34·7	16·7	—	—
4	Orkney total	568	41·7	43·4	16·9	—	—
5	Stornoway (Lewis)	125	49·0	33·0	18·0	26·8	8·35
6	Strath, Sconser, Broadford (Skye)	145	40·6	41·1	18·3	23·4	3
7	Portree (Skye)	70	46·3	26·5	37·2	31·6	<1
9	Seal and Luing (Argyll) ...	68	47·4	34·0	18·6	25·9	2
<i>Caithness.</i>							
10	Wick, town	300	40·7	41·4	16·9	—	—
<i>Northern Highlands.</i>							
11	Sutherland, N.E.	35	39·6	36·9	23·5	31·6	—
12	Ullapool (Ross)	50	40·0	38·1	21·9	22·4	·00
13	Glenshiel, Kintail, Lochalsh, Strome	120	40·1	33·3	26·6	29·7	<1
15	Beauly, Aird, Strathglass, Muir-of-Ord, market ...	170	47·0	32·8	20·2	22·8	·01
16	Inverness, town	200	32·2	41·9	25·9	25·9	·00
17	Nairn, town	80	41·7	41·8	16·5	11·0	<1
18	Inverness, district	500	37·9	39·0	23·1	23·1	·00
19	Keith and Huntly	200	36·1	39·7	24·2	25·5	·16
<i>Eastern Lowlands.</i>							
20	Brodie	125	39·5	39·7	20·7	21·0	<1
20b	Forres, Elgin, Fochabers (Moray)	210	37·1	45·9	17·0	16·7	·00
21	Valleys of the Don and Ury	200	41·5	42·3	16·2	19·7	2·68
22	Aberdeen, city	600	41·2	43·2	15·6	20·7	8·7
23	Brechin, city... ..	100	36·0	49·4	14·6	26·4	12
24	Arbroath, town	167	42·5	41·1	16·1	20·5	2·77
25	Arbirlot, parish	100	36·0	42·1	21·9	21·2	·0

(a) Obtained from the numbers of lighter-haired persons.

(b) Obtained by extracting the square root of the jet-black-haired persons.

No.	District.	No. of Observations.	Teutonic Race.	Alpine Race.	Mediterranean Race.		χ^2
					(a)	(b)	
26	Broughty	98	43·0	40·7	16·6	14·1	<1
29	Angus, actual total	641	40·6	42·5	16·9	22·6	12·32
	<i>Fife.</i>						
30	Kirkcaldy, town	300	43·6	39·3	17·1	19·2	·75
31	Pathhead, Dysart, Wemyss, Methil, Leven, Largo, Colinsburgh, etc.	300	44·2	39·2	16·6	20·0	1·87
32	Eastern Fife (Anster, Pittenweem, Elie, St. Monance)	200	43·6	40·2	16·2	18·7	·69
	<i>Mid Lowlands.</i>						
34	Stirling, town	600	43·9	39·2	16·9	20·7	4·86
35	Perth, city	665	42·1	36·1	21·7	21·9	·00
37	Anchterarder and Dunning	180	43·3	32·9	23·8	24·1	·00
38	Forteviot	300	42·4	35·3	22·3	22·8	·04
	<i>Highlands, Strathearn, etc.</i>						
39	Comrie	100	36·7	37·1	26·2	24·5	<1
40	Comrie and St. Fillans	100	38·1	36·9	25·0	30·8	>1
40 B & C	Callander and Doune	150	37·3	36·5	26·2	26·3	·00
	<i>Breadalbane.</i>						
47	Breadalbane, total	199	41·4	29·5	29·1	29·7	·03
51	Athol, total	290	39·2	39·1	21·7	20·0	·35
	<i>Central Highlands.</i>						
52	Braemar, Ballater, etc.	170	39·1	43·5	17·3	24·3	5·22*
54	Fort Augustus	63	37·1	36·9	26·0	26·6	<1
55	Banavie and Canal	67	47·3	37·3	15·4	12·2	<1
56	Glen Moriston and Lochness	70	46·2	39·1	14·7	16·8	<1
57	Region of the Great Glen, total	200	43·8	37·8	18·4	19·2	·06
	<i>West Highlands.</i>						
60	Fort William	400	37·1	36·5	26·4	32·2	7·96
61	Ardgour	70	45·5	36·4	18·1	20·7	<1

* Mixed Protestant and Catholic District.

No.	District.	No. of Observations.	Tentonic Race.	Alpine Race.	Mediterranean Race.		χ^2
					(a)	(b)	
62	Oonich	100	34·6	33·2	32·2	30·8	<1
63	Ballachulish	220	36·6	34·5	28·9	33·9	3·15
64	Glencoe and South Ballachulish, total	164	41·1	32·1	26·8	31·4	<1
67	Arrochar, Tarbet, etc. ...	112	29·8	39·2	31·0	28·5	<1
68	Inverary, Glen Aray, Cladich	100	37·4	38·7	23·9	24·5	<1
69	Dalmally, etc.	100	31·6	43·9	24·5	24·5	·00
70	Lorn, Sonachan	90	29·8	37·3	32·9	34·2	<1
<i>Galloway, Carrick, etc.</i>							
72	Ayr, market day, half country folk	500	42·0	36·1	21·9	23·2	·44
73	Maybole, Cumnoek, Dalmellington, Patna, Kirk-michael, etc.	250	39·5	41·2	19·3	21·0	·35
74	Sanquhar, Kells, Dalry, Carsphairn	200	36·1	41·4	22·5	23·5	·09
76	Upper Galloway, total ...	250	37·9	41·3	20·8	21·9	·15
77	Stranraer	150	37·4	30·4	32·2	26·5	1·3
78	Dumfries	200	39·4	42·1	18·5	17·3	·12
<i>Edinburgh.</i>							
82	Edinburgh streets, mixed classes	2,000	40·6	39·0	20·4	25·5	very great
83	Edinburgh streets, lower classes	1,000	42·1	29·7	28·2	23·9	very great
<i>Lothian.</i>							
86	Leith, Musselburgh, Dalkeith and Portobello ...	200	45·8	37·0	17·2	18·7	·2
87	Dalkeith, second visit ...	88	52·6	33·0	14·4	12·6	·33
88	Dunbar	150	41·6	44·0	14·4	11·6	<1
89	Midlothian, farmers, shepherds, hinds	300	53·6	31·9	14·5	12·6	<1
90	Fisherfolk of Newhaven and Fisherrow (Lothian) and St. Monance in Fife	176	51·7	32·5	15·8	13·0	<1
91	Fisherfolk of Buckhaven (Fife)	67	42·3	42·3	15·4	12·2	<1

No.	District.	No. of Observations.	Teutonic Race.	Alpine Race.	Mediterranean Race.		χ^2
					(a)	(b)	
<i>The Merse.</i>							
94	Eyemouth, total	125	48.6	39.0	12.4	12.6	<1
95	Eyemouth, other than fishers	100	52.0	30.8	17.2	20.0	<1
96	Eyemouth (?)... ..	100	48.0	33.5	18.5	18.7	<1
98	Dunse, Chirnside, and the Merse, mostly peasants ...	90	51.8	36.4	11.8	9.7	<1
100	Total Dunse, etc.	230	48.6	41.9	9.5	11.0	.23
<i>The Borders.</i>							
101	Selkirk and Darnick	100	41.2	46.4	12.4	14.1	<1
102	Selkirk, market, second visit	200	50.0	32.9	17.1	12.2	1.51
104a	Yarrow, etc., total	100	49.0	39.3	11.7	10.0	<1
105	Peebles	80	44.6	37.8	17.6	15.8	<1
107	Melrose, village	125	42.9	38.1	19.0	15.8	<1
109	Jedburgh, town	150	43.6	38.7	17.7	14.4	<1
110	Kelso and Jedburgh, total...	200	43.2	39.4	17.4	12.2	1.68
111	Hawick, town	180	44.4	38.7	16.9	11.8	3.82
112	Hawick, ram sale, farmers and peasants	100	43.5	38.0	18.5	17.3	<1
115	Rulewater, Jedwater and Up. Liddesdale, peasants	180	46.6	38.5	14.9	15.8	<1
116	Total, Teviotdale, etc. ...	272	44.4	40.3	15.3	17.0	.41
117	Langholm, town	200	43.5	42.2	14.3	13.0	.12
	Total Eskdale and Lower Annandale... ..	156	46.0	43.0	11.0	8.0	1.63

NOTE.—As far as my observations go at present there is a distinct chemical difference between the pigments of red and medium hair as compared with jet black. The pigments of the former seem easily soluble in a two per cent. solution of caustic soda, while that of the latter resists this reagent. I intend writing more definitely on this subject later on.

NOTES ON THE YEZĪDIS.

BY W. B. HEARD.

INTRODUCTION.

So little is known of the religion and customs of the Yezīdis, or Devil-Worshippers, that the present writer, though conscious of the short-comings of the accompanying notes, ventures upon their publication in the hope that they may contain something of interest to Orientalists and students of folk-lore. Much of the information here set down will be found to be inconsistent with that supplied by other writers on the subject. In this respect, however, he does not stand alone, for judging by such literature as he has had access to there exists a singular lack of unanimity in the writings of various authorities, which will not be surprising to those who have attempted to gather information from native sources, which are so often exasperatingly contradictory.

The bulk of the information here provided was obtained from Mr. Thomas Mugerditchian, for many years Dragoman of H.M.'s Vice-Consulate at Diarbekir. His childhood was passed in the large village of Redvan on the Tigris, which contained a considerable Armenian population before the Massacres. Amongst them there dwelt a numerous Yezidi settlement, on good terms with their Christian neighbours, and Mr. Mugerditchian relates that it was through a Yezidi servant employed in his family that he gained access as a child to the secret rites of the Qawāls, so jealously guarded from outsiders, by creeping in between the man's legs, where he remained unobserved in the crowd.

No one has probably had more opportunity of gathering information about the Yezīdis than Mr. Mugerditchian, for not only does he speak their language like a native, and is familiar with their manners and customs since childhood, but whilst accompanying a succession of British Consular Officers on their tours he has become expert in extracting information of various kinds from the native tribes amongst whom he has encamped. In the course of his journeys he has travelled over nearly the whole of the Turkish Kurdistan and has visited in particular Mosul and Sinjar, the great Yezīdi stronghold.

The present writer's experience of the Yezīdis is limited to the tribes inhabiting the district S.W. of Mārdīn in N. Mesopotamia. He found them wearing Arab dress and scarcely to be distinguished outwardly from the semi-nomad Kurds of that region.

The spelling of proper names and places presents a difficulty to a writer

unacquainted with the Kermanj dialect, and, where possible, the Turkish pronunciation has been adhered to.

Various theories have been put forward regarding the origin of the Yezidis, but the riddle may be regarded as still unsolved. Some travellers have observed in them distinctive racial characteristics, but to carry conviction their researches would entail a careful study of all the Yezidi tribes from Erivān to Mosul, which has probably never yet been undertaken. That their language is the Kermanj dialect of Kurdish would seem to point to their Kurdish origin, but language and religion are in no way sure guides to race origin in Eastern Asia Minor.

Their religion bears a certain fundamental resemblance to the Shamanism of certain Altaian tribes and the Devil-worship of the Kazaks and Kara-Kirghiz. The former worship Erlik, the God of Evil, whom though banished by Kaira Kan, the God of Good, they seek to propitiate. The latter, though outwardly professing to be Sunnis, are in reality Shamanists, and venerate the Devil, yet recognize the existence of Khudāi, a benign deity.

In Khodé-Qanj and Malik-i-Tawûs of the Yezidis, we recognize Ormuzd and Ahriman the Good and Evil Principles of Iranian mythology. Though coloured to a certain extent with Dualism, Yezidism in practice means to its followers the cult of the Evil Principle, the Benign Deity being respectfully relegated to a nebulous background, where he reigns supreme but aloof, until the last day. The Demiurge, known by the quaint title of Malik-i-Tawûs (the Peacock King), exercises a far more direct and potent influence upon the destinies of mankind, of whom he is the twin creator, and is to be propitiated accordingly.

Compared with the Evangelical conception of the Evil One, who is regarded as wholly subordinate to God, the rôle assigned to Satan is here seen to be prominent to the extent of almost eclipsing the Personality of the Supreme Deity, though it is admitted that the devil was hurled down from heaven by an outraged God. Inconsistencies are, however, rather the rule than the exception in the Yezidi religion.

As for the tradition of the Creation, the Deluge and the Judgment to come, they appear to be borrowed from Biblical sources, though overlaid with a mass of preposterous fable.

Few races, in a region where oppression has been the lot of the weaker since time immemorial, have had to endure greater persecution than the Yezidis, who are still regarded as a people beyond the pale, without a book, accursed idolaters.

It is pleasant to remember that British influence has more than once been exerted on behalf of these victims of Mohammedan persecution, notably by Layard, who saw something of the tyrant Bedrkhan Bey's ruthless slaughter of the Yezidis, and who earned their unbounded gratitude by his exertions on their behalf. Again, in more recent times the British Embassy intervened to stop the excesses of Eumer Wehbi Pasha, who wrought havoc amongst the Yezidis of Sheikhan and Sinjar, and it was at the instance of our Embassy that Sheikh Ali Bey was restored to his people in 1898.

Whilst refraining from any attempt to proselytize, the Yezidis have clung to their barren faith with a tenacity that excites our admiration, and all attempts at their forcible conversion have proved unsuccessful.

It was recently reported, however, that a movement had started amongst the Yezidis for embracing Christianity, but to which particular Church overtures were made, and how general the movement may be, is unknown to the present writer.

It would scarcely be possible to imagine a religion more lacking in spiritual inspiration, philosophic depth, and in short in all that should go to attract a following of fervent devotees than Yezidism. No inspiring example of a great Founder is there to confirm the faith of waverers; no Holy Book accessible to the multitude; and no code of sacred laws exists to bind together the fabric of their religion. The ministers of their faith are almost as ignorant as their flock. A rude emblem is all that they have to remind them of the sinister Being they worship. Yet men have been found to die and suffer torment for such a faith as this, and if their numbers are shrunken to-day it is due not to apostasy but to the sword.

Origin.—No certain tradition exists as to the origin of the Yezidis. They themselves variously trace their descent from the Khalif Yezid, from Hassan Basri, a Muslim saint, and from the disciples of Sheikh 'Adi, whose shrine is still a place of pilgrimage for the Yezidis. This shrine has been built on the site of a former Christian (Nestorian) Church,¹ and it is recorded in the chronicles of the Nestorians that a certain 'Ady, a monk in the Nestorian monastery of Elkosh, in consequence of a quarrel with a superior, seized the monastery known as 'Adi² at Lalesh, which he converted into a Tekké, where he composed the sacred books of the Yezidis and founded their religion. It is conceivable that this 'Adi may have impersonated the famous Muslim Sheikh of that name, whom the Yezidis venerate as the founder of their religion.³

The Yezidis who have kept their religion are known as "Ometa Yezi" (followers of Yezī or Yezia). They recognize only four religions or *Millets*, namely, those of the Yezidis, Jews, Christians and Mohammedans. They acknowledge also the existence of other cults, such as those of fire, the cow, etc. The four *Millets*, together with the followers of the latter cults, shall rise on the last day to be judged by God, whilst the rest of mankind shall be destroyed.

Some Yezidis believe that they are not the children of Adam in the same way as other peoples. For one day Adam spat and his spittle became a boy, from whom the Yezidis are descended. Hence they are "Holier in the presence of the seven Gods."

Another myth⁴ exists, according to which the Yezidis are the sons of Adam

¹ See *Le Diable promu Dieu*, by Djelal Noury (Constantinople, 1910), for this tradition.

² This church or monastery is said to have been originally consecrated to Mar Addai (St. Thaddaeus).

³ Yezidism, whatever its original form may have been, is probably of far older date than that of Sheikh 'Adi.

⁴ Djelal Noury, *Le Diable promu Dieu*.

alone, and not of Adam and Eve. One day Adam and Eve were disputing as to whether their children were born of their father or their mother. The Angel Gabriel thereupon descended, and taking a drop of blood from each of their foreheads, placed them in two jars. In course of time the blood of Adam produced a boy, whereas from that of Eve came forth flies and noxious insects, and thus the question was decided. This son was known as Shehid surnamed Jeyar, or son of the jar, from whom the Yezîdis are descended.

The Yezîdis of Sinjar relate that King Ahab, Nebuchadnezzar, Ahasuerus and Agricalos (*sic*) were Yezîdis.

Previously to the time of Yezîd, the Yezîdis were known as Wetnhiyûn¹ or dualists. It was only after the reign of the Khalif that they became known as Yezîdis. Yezîd is regarded as the Devil personified; he appeared on earth once more in the form of Sheikh 'Adi, seized the Christian Church of Lalesh and converted it into a Kaaba for his followers.

Sheikh 'Adi.—Sheikh 'Adi, surnamed Sherf-ed-Din Abu'l-Fazaîl, appears to have been a Muslim saint much venerated in the sixth century of the Hijra, who belonged to the Sûfi sect. His genealogy is given as son of Mesâfir, son of Ismaîl, son of Marwân, son of Hassan, son of Marwân. Djelal Noury traces his ancestry for ten generations further back, but regards the genealogy as purely mythical.

The Sheikh is said to have been born at Beiti Fâr, near Baalbek in Cœle Syria, and to have settled in Hekkiari, the modern Sheikhan district (not the Hekkiari, south of Van), where he established himself on Mount Lalesh and built a Tekké, where he collected a following of "Murîds" (disciples). His death is given about the year 555 of the Hijra. Mention is made of him by the Arab historians Mujbir-ed-din Abdurrahman el Eumeri, Ibn Khalikan and Hafiz Zehebi.

According to a Yezîdi tradition, Sheikh 'Adi went to Mecca with Sheikh Abdul Kader el Gîlani, where he remained four years. During his absence the Devil appeared to his followers in the likeness of the Sheikh and instructed them in their religion. After his departure Sheikh 'Adi returned, but the Yezîdis refused to acknowledge him, saying that the real Sheikh was now in heaven. So they slew him and buried him. The Devil appeared once more and told them of their error, after which they built for him the shrine, which afterwards became the chief place of pilgrimage for the Yezîdis. It is possible that the real impersonator may have been the renegade Chaldean monk already mentioned.

According to another Yezîdi tradition Sheikh 'Adi fled from the neighbourhood of Mosul before the Tartar invasion of King Arghûn, intending to take refuge at Aleppo, but on the road thither he was captured by the men of Sinjar, who revered him as a holy man, naming him Nebi, and afterwards Sheikh 'Adi. On his return to his country he died and was buried on the top of Mount Lalesh.

Religious beliefs.—Whilst the Yezîdis believe in two principal deities personifying good and evil, they also recognize other divinities in the persons of various holy men since translated to a higher sphere.

¹ Djelal Noury, *Le Diable promu Dieu.*

The God of Good, known as Khodé Qanj, is acknowledged as the Supreme Deity, the Creator of the visible and invisible world. He is the Prince, the Master, the Creator. Inferior only to him is the God of Evil, known as Malik-i-Tawûs (the "Peacock God"). Khodé Qanj, being wroth with Malik-i-Tawûs, hurled him down from Dunya-jer, the region where God alone dwells, and gave him authority over all evil.

Some Yezīdis maintain that all power in heaven is in the hand of Khodé Qanj, and on earth in the hand of Malik-i-Tawûs.

The latter's punishment is to last 7,000 years, after which he shall make his peace with Khodé Qanj, and sit beside him on the Throne. He is to be a Mediator for his people with the God of Good, even as Christ for the Christians, Mohammed for Islam and Moses for Israel.

Minor deities.—Of the seven minor deities:—

Malik-i-Tawûs is chief.

The second is Sheikh 'Adi.

The third is Yezīd-ibn-Muāwiah.

The fourth is Sheikh Shems.

The fifth is Malik Fakhreddin.

The sixth and seventh are unknown to the present writer.

According to the *Jelwet* (sacred book) each of the seven deities is to rule the world for 10,000 years. The Yezīdis believe that they are still under the reign of Malik-i-Tawûs, who has ruled for 6,000 years.

The last day.—In the presence of the gods of Good and Evil, at the last day, the deeds of men shall be weighed in the scales, and judgment meted out. In that day the sun, which is in the Seventh Heaven, shall fall to the Fourth, and the earth shall become exceeding hot. Then shall the archangel Israfil blow with his trumpet, and immediately all men shall die and the earth shall be consumed with fire. After this the archangel Mikhaïl shall send rain on the earth, and thereby the seed which is in men's "Tails," and which is immortal, shall become soft, and bones, flesh and hair shall form and take shape in the image of those who have died. Then Israfil shall blow with his trumpet a second time, and the dead shall be raised and go to *Hashar*, the Judgment Place, to be judged. Each soul shall be led to the Judgment Seat by an angel bearing a staff (*Shiva Kudreti*). Every time a staff touches a "soul body," it becomes strengthened and immortal. On either side of God shall be set an oil-lamp. The souls of the good shall enter into the oil-lamp on the right side, and those of the wicked into the lamp on the left.

According to another tradition, the resurrection is to take place on the top of Mount Lalesh, where Sheikh 'Adi shall collect the souls of all Yezīdis in a tub which he shall bear on his head. After he shall have passed the Gate of Heaven, no angel shall have the right to question him.

The Yezīdis manage to combine monotheistic belief with the conception of a dual divinity, for of God, the Creator, they say, "From first to last He is alone. He eats not, neither does he sleep. Fate and witness is He."

His names are 3,003, of which the angels know 2,000. The rest are known to none. The Yezîdis swear by the 3,003 names of God.

The nine archangels.—There are nine archangels known to the Yezîdis :—

1. Jibraîl, who bears the Word of God to prophets and believers.
2. Azrael, the archangel of death.
3. Mikhaîl, who brings rain and snow, wind and hail.
4. Israfil, who stands in the presence of God, and announces his messages by blowing with the trumpet.
- 5 and 6. Nekir and Nukir, who come to examine men's souls at their death.
7. Shemkhaîl.
8. Dardaîl.
9. Azazel.

At the judgment (*Hashar-u-Mahsher*) the souls of men and of women are of one sex. In heaven there is no marriage, for "In the presence of God there is only holiness."

The creation.—Of the creation, some Yezîdis relate that God created in His infinite wisdom a jewel and also a bird, known as Atfer, and placed the jewel on the back of this bird. For 40,000 years the Spirit of God brooded upon this jewel.¹

Then on seven successive days He created the archangels.

On the first day (*Yekshem*) He created Azazel, who is Malik-i-Tawûs, and appointed him Chief of all the Angels.

On the second day Dardaîl, whose incarnation was Sheikh Hassan (Hassan Bassri ?)

On the third day Israfil, whose incarnation was Sheikh Shems.

On the fourth day Mikhaîl, whose incarnation was Sheikh Abubekr.

On the fifth day Israîl (?), whose incarnation was Saljeddin.

On the sixth day Shemkhaîl, whose incarnation was Nasruddin.

On the seventh day Nurâil.

It will be noticed that the above archangels do not correspond with the seven previously mentioned. Both lists are given for what they may be worth.

Next in order God created the seven heavens, the earth, the sun and the moon. On the completion of this work God descended once more upon the jewel and cried aloud, whereupon it was broken into seven pieces, and from it came forth the seas and oceans. At this time the earth was round or circular, but God sent Jibraîl in the shape of a bird and commanded him to make it square and fix it fast in its place.

Thereafter God created a ship and rested in it 30,000 years, after which he came and dwelt upon the top of Mount Lalesh. Then God cried to earth and the seas and oceans turned to ice and earth began to quake. Next He commanded

¹ Another version is that God walked upon the face of the waters holding a great jewel, which he threw into the water, and from it the earth was formed.

Jibraïl to bring two pieces of the jewel. One he placed under the earth and of the other he made the gate of heaven.¹ Then he fixed the sun and moon in their places and made the stars from small pieces of the jewel and hung them up in the vault of heaven.

Next he created trees and vegetation, the mountains and hills to adorn the earth, and set the heaven above the earth.

God then spoke to the angels and said, "I am going to create Adam and Eve, and I will call them men, and from them shall come Shahir the son of Jabir, and from them shall come the nation of Azazel (*i.e.*, the Yezidis). God then entered Jerusalem (*sic*) and gave order to Jibraïl to bring earth from the four quarters of the world. Jibraïl brought earth, wind, fire and water, and into these four elements God breathed his spirit and power and from them created Adam.

Jibraïl set Adam to dwell in Eden (Ferdaïs)² and told him that he might eat all things save corn. After one hundred years Malik-i-Tāwûs asked God how Adam was to have children, and where was his inheritance. God made answer, "I leave that in thy hand. Do thou as thou wilt." Then Malik-i-Tawûs came to Eden and asked of Adam whether he had eaten corn. And Adam said, "No, God hath forbidden me to eat it." "Eat it," said Malik-i-Tawûz, "and it will be good for thee." He did so, and his stomach became swollen. Then God gave order to Jibraïl, who came and took a bone from Adam's left side, and of it He made Eve.

The Ark.—Amongst the many places where the ark is said to have come to rest is the Yezidi Mountain of Sinjar (also Shingar or Shengal). The rock made a hole in the ark, whereupon Noah cried "*Shingar*" (the teeth of the mountain trouble us).³ A snake darted into the hole, which was then closed up. Afterwards the snake began to bring forth young, and was burnt by Noah, and its ashes became fleas (this tradition is also current among Muslims in Kurdistan).

A ruined tower is still shown on Sinjar, which is held to be the remains of the Tower of Babel, whence the nations were dispersed.

After the deluge of Noah there was a second flood, leaving no man alive but Malik Salem, who began a fresh generation.

The Seven Sanjaks.—There are seven *Sanjaks* (lit., banners) or clans of the Yezidis distributed as follows:

1. *Sheikhan* (in Mosul district).
2. *Sinjar* (Mount Sinjar).
3. *Aleppo*.
4. *Khatta* (S.E. of Mârdîn and around Redvan in Diabekir).
5. *Zozan* (E. of the confluence of the Tigris and Batwan Su in the Sharnakh district).

¹ Another tradition relates that in the beginning all the world was water, which solidified and became earth; and the vapour of the water ascending formed the sky.

² Firdaus.

³ It is not stated in what language this is supposed to be.—W. B. H.

6. *Haweri* (S. and W. of Jezireh-ibn-Omar on the Tigris).

7. *Moskov* (in Trans-Caucasia).

Religious Hierarchy.—The Yezidis have no Central Ecclesiastical Authority, recognized by the Turkish Government, and look for spiritual guidance to their Chiefs and Holy men, of whom there are various castes and sects, subordinate to a personage known as the "Ikhtiar-i-Merghé," who at present combines the functions of religious and civil chief.

The highest caste is that of the *Mirs* or Princes, who are the supposed lineal descendants of Yezid. They may be compared to the Muslim *Seyyids*.

Next come the *Sheikhs*, who are the chiefs of the Sanjaks. This office does not appear to be hereditary. A Sheikh may sell a place in heaven to a Yezidi.

The Sheikh in charge of the Sheikh 'Adi Shrine is held in much honour. He wears a bracelet of camel-hair as a badge of distinction.

The *Mullahs* teach the secrets of their religion, and preserve the history, traditions and poetry of their race.

The "*Qawāls*" are those who inherit the sacred office of preacher. This sect originated in Ba'ashika and Ba'azané villages near Mosul, and has since spread over the seven Sanjaks. No other persons are allowed to usurp their name and functions. The Qawāls travel about alone or in company, bearing the flags of their Sanjaks and the "*Tawûs-Kushis*,"¹ and journey from village to village accompanied by armed followers.

They sing and play upon the *Tambûr*, *Daûl* and *Zurna* (drum and pipe), and perform secret rites in the villages which they visit. They also clothe and pray for the dead.

The *Pirs* are a class endowed with various sacerdotal functions. They fix the days of fasts, officiate at certain ceremonies, such as betrothals, marriages, etc., and decide as to the ornaments, etc., which may be worn.

The *Kieucheks* are a hereditary sect, some of whom tend the shrine of Sheikh 'Adi, whilst others serve Sheikh Ali, their religious chief. They are also found in other Sanjaks. At times they become possessed by the devil, and prophesy. They also have the power of making men see Paradise (*Ferdûs*).

Lastly, may be mentioned the *Faqirs* who tend the shrine of Sheikh 'Adi. They serve in batches of ten every week, though more may be called upon for service. The office is hereditary. They are permitted to marry, and inhabit other Sanjaks. The *Faqirs* must fast 80 days (eating food only once in the 24 hours), 40 days in summer and 40 in winter. Whilst fasting they must sleep upon grass mattresses. Others are wandering mendicants, who live upon alms. They also instruct children in dancing and singing.

Every Sanjak is entitled to a Mullah, Kieuchek and Faqir.

The Yezidis acknowledge two hereditary Chiefs, religious and civil, who are

¹ Little brass images of Malik-i-Tawûs in the shape of a peacock, said to be blind of one eye. These are made only in the Moskov Sanjak. One seen by Badger consisted of a rude effigy of a bird, more like a parrot than a peacock, perched on a tall brass candlestick.

recognized as supreme by the Sheikhs of each Sanjak. They come of a family known as the *Mâla-Chöl-Begé* (family of the Desert Beys). The religious head is the Kieuehek Sheikh Ali Beg (called the *Ikhtiar-i-Mergé*), who dwells in Ba'adré, Essia, or Berssdagk (?) villages. All the sects take their orders from him, and he is supreme in matters spiritual.

The civil head, who has even greater authority than the above, was Sheikh Mirza Beg, his elder brother, whose seat was at Ba'adré, until his death some years ago. Ali Beg has assumed his functions until such a time as his younger brother Badih Beg, or one of Mirza's sons, shall succeed him.

The two Sheikhs hold the title of "*Mir-i-Sheikhan*,"¹ and the Sheikhs of the seven Sanjaks are appointed by them. They are not permitted to enter other Sanjaks except in case of war, or in order to settle dissensions amongst the Yezidis.

There is a hereditary noble caste known as *Pessmir*. After the *Mir-i-Sheikhan* they are held in greatest honour amongst the Yezidis. Their daughters intermarry with the males of the *Mâla-chöl-Begé*.

On the death of a *Mir-i-Sheikhan* he is succeeded by a son born from a *Pessmir* woman, in default of whom he is succeeded by his brother.

Secret rites.—The Qawāls as they journey from village to village perform certain secret rites and ceremonies, from which outsiders are rigorously excluded.

On approaching a village they beat the drum, and the villagers at the sound hasten forth to meet them and conduct them to the village, where they become the guests of the "Pir." After they have partaken of refreshment the people are permitted to come and kiss their hands.

Before beginning the mystic rites, the officiating Qawāl calls for a large tin dish or "Tesht," more than half filled with water. In this is placed the brazen image of Malik-i-Tawûs, which is then covered with fine silk kerchiefs. The Qawāls meanwhile begin to sing, sometimes in unison, sometimes in solo, to the accompaniment of the Tambûr, Daûl and Zurna. Their songs are both religious and profane. They sing of love and war, of the heroes of the past, of nature, of the lessons conveyed by their religion, and whilst they sing the eldest Qawāl, who presides over the ceremonies, becomes inspired. He foams at the mouth, and believes himself to be in the land only seen in dreams, where dwell the gods and the priests, who burn incense to the gods. He becomes possessed and talks with Malik-i-Tawûs, and then suddenly falls into a trance. At this moment the music ceases, and the Qawāl remains insensible for some fifteen or twenty minutes. Someone now begins to pipe very softly, and the Qawāl apparently comes to life for a moment, for he gives orders that any non-Yezidi who may be present is to be turned out, otherwise Malik-i-Tawûs will not enter into the bird. On being reassured on this point he again becomes possessed, and he utters words in rhyme and sings to the accompaniment of soft music, until his head droops down near the peacock. Then follows a dead silence. All the Yezidis crouch down and gaze at the Qawāl and the image before him.

¹ Djelal Nory gives the word as *Mir-i-Umera*, which is perhaps correct.

Presently a slight commotion is seen in the water and a soft voice is heard, whereat the Qawāl comes to his senses and tells the people that Malik-i-Tawûs has entered into the bird from the water. He then questions the fowl, which replies, sometimes uttering prophecies. When Malik-i-Tawûs has said all that he has got to say, the Qawāl places the peacock on a pedestal and each man kneels and kisses it, placing his gift before the Qawāl. Then follow music and dancing, and the peacock is also made to "dance." Finally, all disperse to their houses after kissing the hands of the Qawāls.

These individuals thus acquire considerable wealth from the credulous folk, who bring them gifts of money and clothing, etc. All that is given, however, they must lay before the Mîr-i-Sheikhan, who, after taking his share, leaves the remainder to the Qawāls.

Many give their new clothes to the latter to wear for two months, which makes them sanctified. Thus the Qawāls are always provided with new clothes.

The Faqirs wear long black shirts of goats-hair and white trousers, and round their necks they tie a red string, known as the *Kherka-i-Sheikh 'Adi*. They too may beat other Yezîdis, who must not retaliate so long as they wear the *Kherka*, under pain of death. It is said, however, that if a Yezîdi becomes enraged and tears off the Faqir's *Kherka* he may strike the wearer without incurring any penalty.

The Devil is believed sometimes to show himself to a specially favoured Qawāl, and in places where he has thus appeared shrines are built, which are known as *Shaks*. The Yezîdis place lamps before these shrines every Tuesday and Thursday evening in honour of Malik-i-Tawûs.

Customs at birth.—Infants after birth are placed for three days in a sieve, and during this period they must not be left alone. They must be bathed or sprinkled with water from the pool of Sheikh 'Adi, which is kept in all Yezîdi houses. This water may be used repeatedly for such purposes. Children unbaptized in this manner are called unclean. All males are circumcized.

Betrothal.—The formalities observed at betrothal are the same as those current among the Kurds. The father or nearest male relative of the future bridegroom brings a sheep to the house of the bride-elect, which is slain, and a feast prepared. The village elders then repair to the house of the bride, and the eldest of the bridegroom's party asks her father three times whether he consents to give his daughter. The latter replies, "Yes, I have given." The girl is then summoned and gifts are offered to her by the bridegroom's party. The bridegroom bestows on her a head-dress (*tasiki*), necklace, earrings, bracelets and anklets. The dowry is settled by both parties, after which the bride's father brings food, and a feast is held.

The Yezîdis are permitted to marry as many as six wives. No limit, however, is assigned to the Mîrs.

Marriage.—The marriage ceremony up to the year 1877 was as follows: The bridegroom would bring gifts to the Sheikh of his Sanjak or to the Mîr-i-Sheikhan and

inform him that he was betrothed to a certain girl, and wished to marry her. The Sheikh would then make the bridegroom kneel before him, strike him three times on the back, and say, "Go, that woman is your wife according to the law." In 1887, however, a Yezidi woman who did not love her husband appealed to the Turkish authorities, and said that she had been married by force without her consent, and prayed that her marriage should be annulled. The Government thus found occasion for interfering with the customs of the Yezidis, and an Imperial Iradé was issued forbidding the Sheikhs to celebrate marriages, and ordering the "Nikah" to be performed by a Muslim Mullah.

Divorce.—Divorce is not permitted except in case of infidelity. Appeal is made to the Mir-i-Sheikhan, who may declare the woman "Aza," or divorced.

Should a Yezidi abduct the wife of another he must pay the full price of the woman, or give his sister or daughter or mother instead. A girl cannot inherit from her father, and may be sold by him. If she refuses to marry she must pay her father for keeping her.

Sexual intercourse is forbidden on Wednesdays and Fridays (as is the custom amongst Christians in these regions).

Yezidis may not marry persons of other religions. Yezidi women are much esteemed by Muslims for their beauty, and, until recently at any rate, were not unfrequently carried off by force or fraud for Muslim harems.

On the marriage day a loaf of bread is brought from the house of a Kieuchek, of which half is given to the bridegroom and half to the bride, together with a piece of Sheikh 'Adi earth, whereby they are sanctified and made fruitful.

The wedding festival is celebrated in the same manner as amongst the Kurds. Men and women dance together and the guests not infrequently get drunk. The Kieuchek, however, and three elders who preside over the ceremonies, are supposed to keep sober.

The bride before her marriage must visit all the shrines on the way to her husband's village, including even Christian Churches, if there happen to be any on the road.¹ On arrival at her husband's house he throws a pebble at her to show that she is under his authority. The eldest man present will then take a loaf of bread and break it on her head, and the pieces are given to the poor (to make her generous).

Burial.—Corpses laid out for burial are dressed in white shirt, trousers, hose and turban, the hands crossed on the breast. A piece of Sheikh 'Adi earth is placed in the mouth. They are then laid on a white sheet (*Koferi*), which is folded over and sewn up the side and ends. A strip of linen of four fingers' breadth is wound twice round the sheet and tied under the body. As with Muslims, they are placed in the grave lying on the right side with the head toward the south. The head is placed in a hole at the end of the trench. Stones are then placed on either side and others are laid across, to keep the earth off the body. The grave is then

¹ In Kurdistan any Christian shrine believed to be endowed with healing properties is visited by all races indiscriminately.

filled in, but no aperture is left as in Mohammedan burial. Upon the grave are placed one or more loaves, a piece of cheese and a *gopal* or crook-shaped stick. A Faqir then says a special *talkin* or prayer and repeats the following doggerel:—

*“Haē t’ē Nekir u Nukir
Lebér déné nan u panir.
Egher pé razi né bu
Lé bēdé gopalé Faqir.”*

Translation.

“When Nekir and Nukir come to you
Offer them bread and cheese.
If they are not satisfied with this,
Beat them with the Faqir’s *gopal*.”

When the gravediggers have left the ground, the two angels Nekir and Nukir are believed to descend upon the grave, and one of them questions the dead, asking him his name, family, village, religion and nation, in what prophet he believes, and what good and bad deeds he has done during his life.

The angels inscribe his answers in a book which they lay before God. If he has done much evil they are sent back to the grave to trouble the dead.

The Kieuchek is believed to have the power of resurrecting a corpse or causing a man to die. Sometimes considerable sums of money are buried with the dead for their use when they arise. Some believe that the souls of the good inhabit the blue sky, and “make men on earth to dream.” The Yezidis also believe in metempsychosis (*Sapē*), or the transmigration of human souls into the bodies of men or animals.

Clothing.—The undergarments of the Yezidis are always white, and to wear anything blue is strictly forbidden. The following chant is very popular amongst the Yezidis:—

*“Yezidiné
Chek sipiné
Pévé Jinnetiné.”*

Translation.

“Yezidis are we.
White are our clothes.
Heavenly are we.”

Fasts.—The Yezidis are accustomed to fast and sacrifice a “Kurbān,” like the Muslims. Various things are considered unclean as food. Amongst other flesh that of the gazelle is forbidden, “for its eyes are like the eyes of Sheikh ‘Adi.”

There is a legend that in Ramazan, God gave word to the Muslims and Christians how long they should fast. To the Yezidis he ordained 30 days

(*Sî rosh*), but Yezîd, who was rather deaf, understood three days (*Sê rosh*), wherefore the Yezîdis only fast three days.

Exemption from military service.—In 1873 an Imperial Iradé was issued ordering the Yezîdis to undergo military service. The Yezîdis thereupon petitioned the Sultan, praying that they should be excused for the following reasons:—

1. Every Yezîdi must behold the image of Malik-i-Tawûs in April, September and November.
2. He must visit the shrine of Sheikh 'Adi once a year.
3. He must kiss, each day, the hand of his Sheikh or Pir, and of his "Brai-akhireti" (brother-in-heaven).¹
4. It is a sin for a Yezîdi to hear the prayers of the Muslims, wherein the name of Satan is anathematized.² On hearing the name of "Sheitan" thus pronounced, he is supposed to be obliged to slay the man who utters it, or himself.
5. When a Yezîdi dies there should be present at his burial a Sheikh, Pir, Qawāl, and "Brai-Akhireti," who shall pronounce the following words: "This man has died in the Yezîdi religion and does not believe any other."
6. A Yezîdi must eat a piece of Sheikh 'Adi before dying (every head of a household has a big ball of earth of which he gives small pieces to his family to eat).
7. A Yezîdi, when he fasts, must be with his people, for when he ate, which he does once in the 24 hours, the Sheikh and Pir must visit him, and he must eat holy bread.
8. According to Yezîdi law, when a Yezîdi is absent from his wife for one year, his wife has the right to desert him, and no other woman will marry him.
9. The opening in his shirt must be made by his "Brai-Akhireti" or "Khushk-Akhireti" (sister-in-heaven).
10. A Yezîdi before putting on new clothes must wash them in Sheikh 'Adi water to cleanse them from the defilement of alien touch.
11. A Yezîdi may not wear garments dyed with indigo, or use the comb or razor of a non-Yezîdi.
12. A Yezîdi may not enter latrines for his casement, but must go into the fields for this purpose.
13. It is forbidden to the Yezîdis to eat certain foods, such as are commonly consumed by the troops.

As it became clear from the above reasons that the Yezîdis would be obliged to violate the tenets of their religion by undergoing military service, they were

¹ Every Yezîdi has a *Brai-akhireti*. This relationship is apparently extended to the next world.

² *E.g.*, "Aûzu billāhi min esh-Sheitān er-rejm." Let us flee to God from Satan the accursed (lit., stoned).

excused from serving in the army and permitted to pay the military tax instead.

The New Year.—The Yezīdi New Year begins in April. On the first Wednesday of this month all Yezīdis must provide themselves with fresh meat. Girls go forth into the fields to gather flowers, which they hang over the doors in honour of the feast. The women visit the graves of the dead, bringing food which they give to wayfarers and strangers, whereby they benefit the dead. At the same time a Kieuchek walks round each grave and prays, whilst a Qawāl plays the flute, and both receive presents from the women.

During April none save the Kieucheks are allowed to marry.

On the first of April (*Ser-ê-salê*) no sound of music may be heard, for on that day God sitting on his throne ordains the things which shall come to pass during the coming year. Every Friday food is brought to the guardians of the flag of the Sanjak.¹ This emblem (or at any rate one seen by Mr. Mugerditchian) consists of three horizontal stripes of red, green and white. A crier then mounts to the top of a house and proclaims the "Dawet-nebi" of the flag. All then bow and kiss the earth.

Charity is regarded by the Yezīdis as an act of religion, and alms are given to the poor of all creeds.

Yezīdi names.—The Yezīdis bear Christian, Muslim and Kurdish names indiscriminately, e.g., Elias (Christian), Hussein, Muhammed (Muslim), and Jindi, Kelesh, Jërdo (Kurdish).

Traces of sun-worship.—The Yezīdis bow and kiss the earth at sunrise and sunset. This practice, however, does not appear to be adhered to with regularity, but only when they chanced to behold the rising and setting of the sun.

Superstitions.—When a woman goes mad, the Sanjak (flag) is put into water, and the woman on drinking of the water is supposed to be healed.

The Yezīdis believe that there is a Sheikh living at Giranjuk near Mosul who has had the hereditary power of charming folk, even from a distance. Thus a disappointed suitor whose beloved is married to another, avenges himself on his more fortunate rival by bribing the Sheikh to "tie up" the husband so that he becomes impotent as regards his bride (though not as regards other women). The jealous rival informs the Sheikh of the names of the bride and bridegroom and the hour of their marriage, and the Sheikh casts his spell. The husband, on becoming aware of the trick which has been played on him, then hastens to the Sheikh with gifts and beseeches him to release him from the spell.

It is related that the descendants of Sheikh Ruhset of Ruhset village, the ruins of which are still to be seen between Beban and Neseri in the Mosul Vilayet, have inherited from him certain magic powers. They live at Beban, and are regarded as holy.

They are said to have the power of charming snakes. If one of them meets

¹ Authorities differ as to whether the flag or the image of Malik-i-Tawûs is considered to be the emblem of the Sanjak.

a snake in his path, he says: "The name of Sheikh Ruhset be upon you," and the snake lies still. This power they confer in exchange for gifts by spitting into the mouth of him who wishes to acquire it.

There is a legend that God invited Skeikh 'Adi and his "Murīds" (disciples) to Heaven, but on starting they found there was no fodder for their beasts. So the Sheikh sent them back to bring chaff from his threshing-floor. Some of this was dropped on their journey, and became the Milky Way.

It is believed that Sheikh 'Adi was so holy that all beasts held him in respect.

The Yezīdi Sheikhs, in order to make their people bring offerings of food and gifts, sometimes threaten them with *Hal* (typhoid ?) and famine, or the oppression of their enemies.

Sheikh 'Adi Pilgrimage.—The pilgrimage (*Ziaret*) to the Shrine of Sheikh 'Adi takes place in October or November. The ceremonies and feasts, etc., last a week, though the people of Ba'a-shika and Ba'azané remain a week longer. The Ikhtiar-i-Merghé presides over the festival, assisted by the Kieueheks and Faqirs.

Men and women put on their festal attire and dance together, and there are feastings and horse-races. The pilgrims are forbidden to cook their food, as all must obtain it from the kitchen of the shrine, for which they must pay. Much food is also distributed amongst the poor. The Kieueheks and Pirs sit upon stones $\frac{1}{2}$ arshin (cubit) high, where they make prayers and judge the people who visit each stone, bringing gifts. The Yezīdi young men and girls who wish for success in love, the birth of children, etc., bring offerings of money to these stones. When the sacrifice (*Semad-i-Sheikh 'Adi*) is being cooked, the young men, desiring to show their courage, snatch pieces of meat from the caldron. When the sacrifices are being offered the people must bathe in the Zem Zem Su, which flows below the shrine.

On the seventh day the Civil Mir-i-Sheikhan gives to the young men permission to carry off the damsels they desire, which, as may be imagined, leads to considerable quarrelling and fighting, which the Mirs and Sheikhs do their best to prevent. The horsemen carry off their brides on horseback, those on foot lead them away by the hand. On such occasions the girls, who wear their finest clothes in order to capture the hearts of their swains, take the opportunity of running away with their lovers; and indeed, most of the matches are made by mutual consent. No union, however, is allowed to take place near the shrine.

On the last day of the festival, the Ikhtiar-i-Merghé seeks out the oldest man among the Faqirs (called the *Chawish* ?) and causes him to be stripped and dressed in the skin of a goat, whilst his neck is hung round with small bells. (Another authority mentions a goat-hair rope 9 hand span, hung with little bells.) This individual then walks round those assembled on all fours, uttering the while the noises of a he-goat. It is considered that those present are sanctified by this performance. He receives gifts, of which he must give a proportion to the Mirs and others.

Pilgrims remove their shoes at half an hour's distance from the shrine, which they approach bare-foot.

On the day known as *Hajdos* they proceed to Mount Arafat, where they collect pieces of soil and fire their guns. Thence they run all the way to the shrine, and he who arrives first has much honour.

On the day known as the "Qawāl's Road," everyone proceeds to Mount Arafat wearing a rope round his neck. Each returns with a faggot which he places before the shrine, whose denizens are thus supplied with fuel. It will be observed that the religious authorities have so arranged matters that they must want for little in this life.

A copper sieve known as the "Takht" or seat of Sheikh 'Adi was formerly preserved at Bahezané village. It was brought to the "Ziaret" and it was believed that Sheikh 'Adi used to sit on it, whilst the Sheikh was judging the people. This was carried off by General Eumer Pasha in 1892.

Other Shrines.—There is a shrine known as that of Mohammed Reshan, behind Sheikh Metté Mountain near Mosul. Here the elders settle disputes between contending parties, who must swear by that shrine.

Sick persons visit the Shrine of Khasia, or if unable to travel, will pray to it to heal them. The Shrines of Sitt Nefissé near Bahshika and of Abdi Resho near Kharabé village in the vicinity of Mosul are said to be endowed with the power of healing jaundice.

The Sacred Books.—The sacred books of the Yezīdis are two—the *Jelwet* and *Mēs-héfa-Rēsh*. These are written in Kurdish in Arabic characters on gazelle-skin. They contain the word of God with interpretations and commentaries, together with traditions and fabulous tales.

The *Jelwet* is the Book of Revelation of Yezīd and the ancient sages, detailing the revelations and visions of Yezīd and his successors.

The *Mēs-héfa-Rēsh* gives commentaries and explanations of their religion, lays down their ritual and ceremonies and contains the traditions and histories of the wars of the Yezīdis, their superstitions and fabulous legends.

The originals of these two books (no copies are said to exist) were of recent years in the keeping of Sheikh Abdal living at Kasr Yezid, some eleven hours west of Mosul, unless they have since been brought back to the shrine of Sheikh 'Adi. It is said, on the other hand, that there exists a copy of the *Jelwet* in the possession of a certain Mullah Hadi, living at Ba'a shika, together with the writings of various Yezīdī poets.

The following are the opening passages of the *Jelwet*, adapted from the translation of a Chaldean Ecclesiastic of Mosul, made in 1901.

CHAPTER I.

"I was. I am present now and shall remain until the end. I rule over all creatures. I ordain the works and affairs of all men existing under my powerful hand.

"When and where it is needful, I am ready to help all that ask, search and call for me. I am present everywhere; there is no place where I cannot be found.

"All evil that exists or happens to mankind, I am therein, and it happens with my knowledge; and because evil happens against the will of men, so they call it evil.

"Every period has its special order, and that through my knowledge. Each period has its ruler (*hukmdar*), and at the end of each period a new one succeeds him.

"I allow all creatures to make or burn (destroy?) according to their habit and taste.

"Any man who works against me will repent and be ashamed.

"Other Gods cannot interfere with my work, and what I wish to do, they cannot prevent it.

"All books which are in the hands of those outside my religion, though written by prophets and apostles, are crooked and pervert the truth.

"The latest book (*Jelwet*) cancels all others. You may understand what is true or false by trying it.

"I fulfil my promise to him who trusts us.

"I am free to fulfil or not my promise according to the information given to me by those whom I have ordained to rule the periods and guide my people.

"The needful orders and work at the time I mention and fulfil.

"I teach my law to those who obey me, and they will have peace and success as long as they keep peace with me.

"CHAPTER II.

"I punish the race of Adam, and reward whom I will.

"I reign over the earth, over the height and depth.

"I allow no man to work against me.

"I do not forbid good to those who obey and believe me.

"I reveal myself in different ways to those who follow and hear me.

"I give and I take. I make rich and poor.

"I make fortunate and unfortunate.

"I give prosperity and misfortune.

"Those who are under my power cannot interfere with my work or forbid me; though they are against me I give them sickness and trouble.

"I allow no man to live longer than I have ordained, and when I will, the second and third time I raise him alive again.

"CHAPTER III.

"I lead the people without books, and bring them to the right way.

"My laws are not heavy to bear, they are suited to the time and circumstances. And whoso worketh against my judgment, I punish him.

"The children of Adam do err because they cannot comprehend the future.

"All the beasts of the desert and the birds of the air and the fishes of the sea, all are under my hand and power.

"All the mines in the heart of the earth are evident to me, and I transfer from one to the other.

"My power and miracles I show to those who ask me, and all who work against me shall be troubled because they do not know that riches and poverty are in my hand, and I give to the children of Adam who deserve.

"Since the beginning, the succession of men, periods and nations, and the change of rulers I have ordained.

" CHAPTER IV.

"My rights I give to no other God.

"I have created four elements of the earth to fulfil the needs of men, which are water, earth, wind and fire.

"And I have created the four seasons of the year and the four foundations of the earth.

"I accept the sacred books of other nations, so long as they agree with my laws.

"Three things are against me, and three names I hate.

"He who fulfils my mysteries shall enjoy my promises.

"I will reward him who suffers for me.

"I desire that all my subjects be united, and that they should oppose other nations.

"Oh! ye my people who hear my voice, deny everything and every word which does not come forth from me.

"Ye must not utter my name, nor speak of my shape, for if ye do it is a sin. Ye must not be careless like other nations for this.

" CHAPTER V.

"Respect my image and myself, for when ye leave the path of my truth, they will lead ye aright.

"Obey my servants. Hear and perfect the knowledge and mysteries they make known to you from them."

In former times the Yez̄idis were in constant conflict with the Kurds and the Turkish Government, and those of Sinjar are still practically independent and are noted brigands. Djelal Nouri mentions six punitive expeditions sent against them since the year 1821.

In 1841 and 1842 Bedrkhan Bey, the grim Kurdish chieftain of Rowanduz, inflicted horrible massacres on the Yez̄idis of Sheikhan and Tiyyari, men, women and children being put to the sword without mercy. Great numbers of the Nestorians also shared the same fate. In those days, relates an old man who witnessed these events, a girl was sold for a *shalwar* (Kurdish trousers).

The last expedition against the Yez̄idis took place in 1893. It was the time of the Armenian massacres of Sassun and Talori, the prelude to greater horrors to come, and the Palace being in a suspicious mood lent an ear to the words of Surri Pasha, Vali of Diarbekir, who reported against the Yez̄idis, accusing them of being

barbarous folk without religion, and dangerous to the Government and Islam. An Iradé was accordingly issued for their forcible conversion, and an expedition was despatched against the Yezidis of Sinjar under General Eumer Wehbi Pasha consisting of eight battalions. The Pasha, a harsh and cruel man, was invested with full powers, and at once summoned Sheikh Ali Bey, the Mir-i-Sheikhan, whom he endeavoured to convert to Islam, but without avail. The Sheikh was sent to Constantinople, and on his again refusing to abjure his faith, was exiled to Castamuni. Eumer Wehbi then arrested Sheikh Abdal, from whom he endeavoured to obtain the sacred books, but without success, as the Sheikh had already taken them to Sheikh Mirza Bey of Sinjar. The Pasha now turned his attention to the Yezidis of the Sheikhan region, of whom he massacred considerable numbers, and Sheikh Mirza Bey sent messages to all the Yezidis to assemble in Sinjar for the protection of the "Sanjak of Yezid" against the "Red fezzes."

Eumer Wehbi made repeated attacks on Sinjar, but the rocky hills were too steep for his guns, and he was every time beaten back.

Leaving detachments to hold the four roads leading to Sinjar, the Pasha then drew off into the plain, and ravaged and massacred both Yezidis and Kizilbashs, for the latter, mistrusting the humour of the Government, had made common cause with the former. Shrines were destroyed, Sheikhs and Mullahs were barbarously tortured, and the unfortunate inhabitants suffered the usual fate of the vanquished in these regions. Enraged at his reverses in Sinjar, where he had lost some 500 rifles, Eumer Wehbi next proceeded to attack the neighbouring Kurdish and Arab tribes of the desert, whereupon Ibrahim Bey (afterwards the famous Ibrahim Pasha), chief of the Milli Kurds, protested to Headquarters against the Pasha, and other Kurdish chieftains did the same, whilst the British and French Consuls in Mosul reported to their Embassies the barbarous behaviour of the Turkish general. Orders were accordingly sent from Constantinople to stop the carnage, but the Pasha refused to heed any orders coming through Mosul or Diarbekir.

Disorders were now general throughout Southern Kurdistan, and the Kurds were getting out of hand, so orders were finally sent from the Palace for the dismissal of Eumer Wehbi Pasha and the withdrawal of the troops.

In 1898 Sheikh Ali Bey was pardoned at the instance of the British Embassy, and returned to Sinjar.

Since Eumer Wehbi's expedition the Yezidis have been left in peace, though in 1908 a considerable number belonging to the Sharkian Denan, and other Yezidi tribes, subject to Ibrahim Pasha, were slain, when that chieftain's country was plundered and overrun by the troops and tribes sent to suppress his revolt.

Is it too much to hope that the new era which has dawned in Turkey may hold brighter days in store for this courageous race, who have clung so tenaciously to their mysterious faith through all the dark years of their stormy past?

(*Origin of the name Yezidi.*—It seems improbable that the name has in reality any connection with the Arabic Yazid, the name borne by the adversary of 'Ali as

well as by other *Khalīfahs*. As the faith is, no doubt, an old one, is it not possible that the name also is pre-Muslim? As the Yezīdis speak an Iranian language may it not be a corruption of an old Persian name of the Deity, converted into a devil by the dominant religion? The Persian Yazd, Izad (old names for God) seem to offer a possible origin, and Yazīd may be only an Arabicized form.—M. L. DAMES.)

THE EARLY INHABITANTS OF WESTERN ASIA.

The Huxley Memorial Lecture for 1911.

BY FELIX V. LUSCHAN, M.D., D.Ph., Professor of Anthropology in the University of Berlin.

[WITH PLATES XXIV-XXXIII.]

STANDING on the "New Bridge" in Constantinople near the Mosque of the Sultan Validé I have more than once tried to count the languages and dialects spoken by the crowds pressing and pushing between Galata and Stamboul. Turkish and Greek are naturally the most frequently spoken, but one also easily distinguishes much Armenian, Arabic, Kurdish and Persian. We hear the harsh voices of some Circassian soldiers and learn from an Abkhasian friend that he does not understand their language and that "it might be" Lesghian. He also tells me that many of his Circassian friends serving in the same regiment are obliged to speak Turkish when they want to understand one another.

We then meet Albanians, Bulgarians, Roumanians, and are addressed in Serbo-Croatian by an old priest from Bosnia. You are sure to hear in less than five minutes five other modern European languages, English, French, German, Italian and Russian, and then your ear is startled by the melodious Spanish of some Spaniole Jews from Salonika, who still retain the idiom spoken in Spain when they were expelled from there more than four hundred years ago, and have thus actually preserved the language spoken by Cervantes. And we hear other Jews on their pilgrimage from Russia and Poland to Jerusalem, speaking their curious Yiddish, a sort of German, that no German could understand without making it a special study. Once on this bridge I had to play the interpreter between a Hungarian gipsy and some Aptals or other gipsies from Anatolia, and an instant later I saw a Dinka eunuch sitting on the motor-car of an Imperial princess and making his selâm to a group of equally dark and equally tall Bari or Shilluk.

Bilin and Nuer also are very commonly spoken by Stamboul eunuchs, and I was once told by one of my coloured friends there that more than a thousand female servants are living in metropolitan palaces, all coming from Bornu and speaking Kanuri. Another day, on the same bridge, I met some East Indians, speaking, as they told me, Hindi, Hindustani and Gujerati, and trying in vain to come to an understanding with a large troop of African Hajjis returning from Mecca, some of whom were Hausa, others from Zanzibar and the Swahili coast, others from Wadai and Baghirmi. One may also meet on this bridge Mahometans from China and from Indonesia, and, to complete this Babylonian confusion of

languages, some day or other even a Papuan from Doreh or some other place in Dutch New Guinea may appear there on his Hajj to Mecca.

Not less numerous than the languages are the types one meets in Constantinople or in any other of the larger towns in Western Asia, and even within a linguistic group there is generally a most striking diversity of somatic qualities. There are Turks with fair and Turks with dark skin, Greeks with short and Greeks with long heads, Arabs with broad and low noses, and other Arabs with narrow and high noses, Kurds with blue and Kurds with black eyes; and the more one studies the ethnography of the Ottoman Empire the more one sees that "Turks" in reality means nothing else than Mahometan subjects of the Padishah, that "Greeks" means people belonging to the Orthodox church, and that "Arabs" are people speaking Arabic: the somatic difference between a Bedouin from Arabia or Mesopotamia and an "Arab" farmer from near Beyrout is striking, and they have nothing in common except their language.

Also the study of the modern religions in Western Asia is of no help to us in this labyrinth of types. There are Greeks who look like Mahometans, and many Ansariyeh or other ("Moslem") sectaries are not to be distinguished from Armenians. Religion, too, is here much more closely connected with late historical events than with races or nations, and is only too often of a merely accidental character.

Even the old historians do not help us. Their anthropological interests were generally trifling, and important statements like the note that the Armenians "*πολλὰ φρυγίζουσιν τῇ φωνῇ*," or that a tribe from the Solymian Mountains spoke Phœnician, are extremely rare in the old writers, who give us names like Lycians, Carians, Cilicians, and so on, but, generally, do not give us the slightest details as to their place in an anthropological system.

So we can well understand how, fifty years ago, G. Rosen, then perhaps the best authority on the nations of Asia Minor and Syria, could say that the anthropology of Western Asia would "always remain a mystery."

Since then minute anthropometric researches and vast excavations have both thrown light on most of the problems connected with this "mystery," so that it may now be considered as practically solved.

My own way of proceeding was to eliminate one by one every national or racial element that could be traced as having come from outside, and then to study the remainder. It was my good fortune to begin archaeological and anthropometric fieldwork in Lycia as early as 1881, and since that time I have never ceased to collect all available data connected with the natural history of man in Western Asia. So it is the work of thirty years of which I now beg to give a short account, and this will be done best by beginning with the ostensible foreign elements and then describing the remaining tribes and groups.

A. *Dark Africans.*

These are naturally by far the easiest to eliminate, and they have only in a very insignificant way contributed to the building up of the white communities

in Asia Minor and in Syria, although they have been imported there from the earliest historical times down to our own days. Even now there are few houses of wealthy Mahometans without dark servants, male or female, and without half-caste children of the most various tints. Nowhere, perhaps, with the exception only of Brazil, could miscegenation be better studied than in the large towns of the Levant. Domestic slavery is still flourishing there, and "black ivory" generally comes, as in the old times, from the Upper Nile, but also from Bornu. In the Turkish-speaking south of Asia Minor a dark African is generally called *Arab*, in Syria *Maghrebi* or *Habeshi*. As far as I know, social inferiority is never connected with colour; half-castes frequently intermarry with whites, but still there is no real Negro permeation of the other natives, probably because that section of the offspring which reverts to Negro qualities does not stand the climate.

B. *Circassians.*

About a million of the Mahometan inhabitants of the Caucasus immigrated into Asia Minor and Syria after the fall of Shamyl. The lot of these *muhajir* (refugees) was generally a melancholy one; the Ottoman Government did its best to give them land, but land without a master is rare also in Turkey, and in many places the result was a fight of all against all or a state of regular brigandage, often resulting in the final extinction of the Circassians. Where the land given to them was really masterless, it lay in unhealthy swamps and marshes, where malaria raged and carried them off at a terrible rate year by year. I know a place near Islahiyeh where more than a thousand Circassian families were settled about 1880; now only seven of them remain, and these in a wretched state of fever and disease. Only a very few of these Circassian colonies are really thriving, and probably most of these glorious sons of snowy mountains will in a few generations have paid with their lives for their fidelity to Islâm.

Till now the Circassian blood has not seriously influenced that of their Turkish neighbours, and probably never will. The colonists very seldom give their daughters to Turks or Arabs and the "soft Circassian beauties" play a larger part in fiction than in actuality.

C. *Albanians.*

The number of Arnauts or Albanians actually living in Asiatic Turkey is said to be about 100,000. Many of them serve in the army, some are high government officials, a few are even in the diplomatic service and famous for their unusual intelligence. Most of the "kavasses" of the foreign consuls and rich merchants are Arnauts, and so are nearly all the boy-servants in the Turkish bath establishments. Most of the large "hans" [caravanserais] in the interior are also managed by Albanians.

It is easy to separate these Albanians from the great bulk of the other Islamic elements of the Ottoman Empire, because they are all proud of their nationality and

stick to their native language. They intermarry rarely with aliens and are remarkably homogeneous as to their physical qualities. They are nearly all dark, tall, with large, extremely brachycephalic skulls, and high and very narrow noses. Somehow connected with the Dinaric race, they have, by long inbreeding and isolation in their nearly inaccessible mountains, acquired their remarkable and quite peculiar type.

D. *Bulgarians.*

The few thousand Bulgarians living in Asiatic Turkey are mostly confined to Constantinople and some towns on the north coast of Asia Minor. Their language and their garb permit us easily to isolate them, and they are so few in number that we may neglect their influence on the somatic qualities of their alien neighbours.

For the same cause also we may here omit the Roumanians and Serbs.

E. *Bosnians.*

Since 1879 probably not one Austrian Lloyd steamer has left Trieste for Constantinople, without having on board some Mahometans from Bosnia and Herzegovina, desirous of escaping Christian rule. They settle by preference near Brussa, and will probably in some generations have a certain influence on the type of the Islamic inhabitants of the neighbourhood. It may therefore be stated here that, though they are called "Turks" in Austria, they have no Turkish blood. They are descendants of the typical South-Slavonic population, which inhabited Bosnia and Herzegovina long before the battle of Kossovo-polye (1389), and were, after the fall of the Servian Empire, forced to turn Mahometans. They do not even speak Turkish, but have preserved their old Serbo-Croatian language. The very few Bosnians, mostly officers, that settled in Asiatic Turkey before the Austrian occupation of Bosnia, may be omitted here.

F. *Franks and Levantines.*

Frenghi [Franconians or Franks] is the common name for the European Christians (and also for syphilis) all over the nearer Orient, and the descendants of European, generally French and Italian, and therefore Roman Catholic, families are called Levantines. They take only a minimum share in the building up of the Oriental populations. In Marmaritzza, near Halikarnassos, where a British Squadron had a winter station for many years, a very great proportion of the children is said to be flaxen-haired, and at Kynik, the ancient Xanthos in Lycia, I met in 1881 a Mahometan, quite fair, with light blue eyes, of rare intelligence and with nearly a fanatical interest in geographical and archaeological problems. He was born in 1841, a year after the second expedition of Sir Charles Fellows at Xanthos. Near Sendjirli I know an Armenian woman who is very fair; her own people pretend that she is the daughter of an American. But all these are rare exceptions, of no

general importance, and I feel sure that the modern admixture of European blood is in no way responsible for the great number of light-coloured people also in the interior of Asia Minor and Syria.

That in Oriental towns with very hot summers the death-rate of light-coloured children in Frankish and Levantine families is essentially larger than that of dark-coloured, has been often asserted, and would naturally be of universal anthropological interest if proved by serious statistics. Personally I do not know of one single light-coloured Levantine family in places infected with heavy malaria.

G. *Jews.*

As the Oriental Jews practically never mix with the other Orientals, and so do not contribute in any way to the physical qualities of their Oriental neighbours, they would be of no interest for this paper if we could not trace them back to very early times. But their racial position can only be investigated in connection with the old and oldest anthropology of Syria and Palestine. So for the moment we must here confine ourselves to the statement that there are several very distinct groups of Oriental Jews.

By far the most numerous are now the *Sephardim*, speaking an early Spanish dialect, and descended chiefly from Jews expelled from Spain by the narrow-minded fanaticism of the fifteenth century. They have contributed not a little to the intellectual and economic development of the Ottoman Empire.

Of far less importance are the *Ashkenazim*, speaking "Yiddish," and descended from Jews emigrated from Eastern Europe. The difference between these two groups was originally merely geographical and accidental, but now they are holding themselves rigidly apart, and I know of a small Ashkenazic community in south-western Asia Minor, that abstains from meat rather than eat of an animal killed by a Sephardic butcher. I could not learn if there were also differences in creed, but practically these two groups are like different sects, and in most places there is less intercourse between them than there is between Protestants and Catholics in the most backward villages of Central Europe.¹ This is perhaps of some importance in connection with the fact that both Ashkenazim and Sephardim are equally distinguished by a complete absence of uniform racial characteristics, just as it is with our Jewish friends in Europe.

The "enlightened public" of course knows better. Some Jews themselves state that they are "pure Semites, chosen and selected," and even in modern scientific papers one may still read of the complete "uniformity" of the Jewish

¹ R. Andrée, in his *Volkskunde der Juden*, quotes a passage in the *Jewish Chronicle*, 1878, where an Ashkenaz asks if "those Portuguese are real Jews, or only a sort of half-castes but distantly related to our glorious race?" A Portuguese answers him, "that we are the Jews of the highest caste, as may be best evidenced by the fact that we have always refused to assimilate ourselves with the lower caste—the Tedeschi." So felt the Jews in London and in 1864 the Sephardim of Bucharest bought a churchyard for themselves, to have nothing in common with the Ashkenazim, even after their death!

type. But this uniformity only exists in the books and not in reality. There are Jews with light and with dark eyes, Jews with straight and with curly hair, Jews with high and narrow, and Jews with short and broad, noses; their cephalic index oscillates between 65 and 98—as far as this index ever oscillates in the *genus homo*! Indeed, since my paper on the anthropological position of the Jews¹ there is, as far as I know, no serious anthropologist who still maintains the *cranial* uniformity of the Jews. It is also conceded that the great majority of the Jews is decidedly brachycephalic, whilst the typical Semites are essentially dolichocephalic. But even giving up the *cranial* uniformity, one still speaks of the marvellous tenacity, frequency, and distinctiveness of the Jewish type of *face*. Now this “Jewishness” is much more easily felt than defined, and Joseph Jacobs,² 1885, was the first to try an exact definition. It is a certain and typical development of the nostrils (Jacobs’ “nostrility”) that is the best characteristic of what we generally call “Jewish.”

Weissenberg,³ wanting to prove a specific Jewishness of type, relates how he showed some hundred photographs of Russians and Russian Jews without distinguishing or peculiar dress, etc., to two friends, a Russian and a Jew; the first was correct in 50 per cent., the second in 70 per cent. of his statements. I do not think this experiment very convincing; Weissenberg should have shown his friends photos of Greeks Armenians, and Persians. The number of correct identifications would then have been certainly very much smaller, and it would have become evident that what Weissenberg takes to be “Jewishness” is nothing more than *Oriental*, pure and simple. I shall refer to this statement towards the end of this paper, and meanwhile only want to advert to Table II on p. 238 showing in the thick line the cephalic indices of 1,222 Jews; 52 per cent. of these were Sephardim, whom I measured at Smyrna, at Constantinople, at Makri, and in Rhodes; the rest were Ashkenazim measured by myself when I was one of the medical assistants in the Allgemeine Krankenhaus at Vienna, Austria.

Besides these two large groups there are other Jews in Turkey and in Egypt, who have been there since the early times of the Diaspora and longer. But they are few in number and I had no opportunity to measure any of them.

H. *Gipsies, Apat, etc.*

A small but highly interesting group is formed by the Gipsies and their kin. About 30,000 of them are said to infect Turkey with their disorder and inclination for theft and larceny. On the other side they are cheerful company, men and

¹ “Die anthropologische Stellung der Juden,” *Correspondenzblatt der deutschen anthropologischen Gesellschaft*, 1892. Also in an Italian translation by Prof. Ugolini in *Arch. per l’Antropologia e l’Etnologia*, vol. xxii, 1892.

² “On the Racial Characteristics of Modern Jews,” *Journal Anthropol. Inst.*, 1885, vol. xv p. 23 ss.

³ *Globus*, Bd. 97, 1910, p. 329.

women, not seldom with a certain beauty.¹ They make baskets and sieves; the men are mostly blacksmiths and shrewd horsedealers. They are never settled in houses, but wander with their goat-hair tents, in winter-time on the plains, in summer high up in the mountains. I once met a small "village" of about ten gipsy-tents as high as 8,000 feet. Unhappily, nothing is known about their early migrations and history; they speak Turkish in Asia Minor, Arabic in Syria, and keep secret their own language with so much care that my various and repeated efforts to get at least a few phrases turned out a complete failure.²

In Northern Syria I met a kind of Gipsies calling themselves *Aptal*; they lay a certain stress upon their *not* being Gipsies, but I could find no real difference either in their somatic qualities, or in their ethnographic or social standing. Some of them often wander about like Dervishes in groups of four or five, and with a large red or green banner; others are jugglers and conjurors and play tricks with serpents.

Gipsies never, or hardly ever, mix with other tribes in Syria or Asia Minor. They naturally pretend to be Mahometans and have Islamic names, but they are always treated with a certain contempt or disesteem. Mahometans hardly ever curse; but one of their rare abusive phrases is *tchingene*=gipsy.

Till now, we have been treating of a few isolated groups that are very easily separated from the bulk of the tribes of Western Asia. We now come to some nomadic tribes, who also form quite distinct groups: Turkomans, Yuruks and Kurds.

I. *Turkomans.*

Real Turkomans, coming from West Turkestan, are rather rare in Asia Minor, and I never met any in Syria. They travel in quite small groups, one or two families only, and are to be distinguished even at a great distance, as they are the only tribe in Asia Minor which has the real camel with two humps, all the others having the dromedary. I once met a family of such Turkomans, near Old Limyra in Eastern Lyeia, that had come "from near Samarkand." They had been away from home four years and wanted to go as far as Constantinople; in five or six years more they thought—*inshallah*—to reach their home.

Some of these Turkomans have very oblique eyes; all have small roundish heads and are of low stature, seldom exceeding 160 cm. They do not mix with the native inhabitants.

¹ Cf. some types I published in Petersen and von Luschan, *Reisen in Lykien Milyas und Kibyratis*, Wien, C. Gerold's Sohn, 1889.

² Henry Minor Huxley (*American Anthropologist*, vol. iv, 1902, p. 49) examined at Jerusalem a few Gipsies of Syria that spoke Arabic, "but among themselves fluently Gipsy. Many of their words have exactly the same forms as are found in Hindu Gipsy words." I do not know if this statement is confirmed by other explorers.

J. *Yuruks.*

Another nomadic tribe found in Asia Minor in far greater number than the Turkomans, is formed by the Yuruks. The word means "wanderer," and many misunderstandings are due to this ambiguity, as all sorts of "wanderers" have been described as Yuruks, just as settlers in South Africa sometimes speak of "Bushmen," not meaning the real Pygmy-Bushmen, but dark and tall Kafirs living "in the bush."

I wrote upon the real Yuruks in the *Z. f. E.* 1886, xviii, *Verh.* p. 167 ss., and may here refer to this paper and to the plates in *Reisen in Lykien, etc.*, quoted here (p. 227, note 1).

They are remarkable for the artificial deformation of their head and their generally long skulls. Their real home is not known. They speak Turkish, and up to the present no trace has been found of their original language. I once suggested that they might be in some distant way related with the Gipsies, with whom at least some of them have a decided and striking somatic resemblance; it then seemed to me possible that their high moral standard, their serious and decent ways, and their assiduity in work—their wives are famous carpet-makers—might be due to Islâm. But this was a mere suggestion, and it might well be that their resemblance to the Gipsies is only quite accidental. I hope that others may be more successful and find legends and traditions, remains of the old language or other material that would permit us to trace the Yuruks back to their real home.

Meanwhile a sort of jealousy between them and the settled Mahometans excludes intermarriage almost without exception.

K. *Kurds.*

Kurdistan, the land of the Kurds, is a vast mountainous territory, nearly twice as large as Greece, in the south-east of the Armenian mountains. Its frontiers are undefined and uncertain, changing with the scattering or gathering of a floating mass of, chiefly, nomadic inhabitants.¹ The greater, north-western part is under Ottoman, the south-eastern under Persian, control. We know of no political unity of the Kurds, and, as far as we can trace back their history, they were always forming many different tribes (*ashirets*) under independent chiefs, whose strength was only broken in the last century, in Turkey not without the aid of Moltke, then a young Prussian officer.

The Kardouchoi and Gordyaeans of the old historians are most probably the direct ancestors of the modern Kurds, but we do not know when these tribes first set their foot upon the soil of their present home. The Assyrian annals and careful

¹ The best statistics on Kurds are due to Mark Sykes, *Trans. Roy. Anthropol. Inst.*, vol. xxxvii, 1908, p. 451 ss.

excavations on the upper Euphrates and Tigris will probably, at some future time, shed light upon this question.

Meanwhile it is important to state two facts: *The Kurds speak an Aryan language, and they have long heads and generally blue eyes and fair hair.*

I have studied three groups of Kurds, 115 men near Karakush, 26 men on the Nimrud-Dagh, and 80 men from near Sendjirli—all adults. In the Karakush series 71 men were xanthochroic, on the Nimrud-Dagh 15, and in Sendjirli 31, this being 62, 58 and 39 per cent., respectively, and for the whole number of 221 adult men, 53 per cent. The cephalic index oscillated, in the case of the 115 Karakush Kurds, between 713 and 785, with the Nimrud-Dagh men between 723 and 783, and in Sendjirli between 744 and 809, the arithmetic mean being 749, 752, and 769. Two good types are reproduced here, Plate XXIV.

The Kurds from Karakush and from the Nimrud-Dagh live nearly isolated; I found only one or two small Armenian merchants with them; the Kurds from Sendjirli stay near "Turkish" and Armenian villages, and it is known that they sometimes steal and marry Armenian wives, and not seldom they intermarry with "Turks"—so it is probable that the Kurds from Sendjirli are less typical than those from Karakush and Nimrud-Dagh.¹ I saw many other Kurds on the plain between Kyrkhan and Marash, whom I could not measure, but who seemed to be in absolute conformity with the Kurds I had measured. So I may state that the western Kurds are dolichocephalic, with an average index of 75, and with more than 50 per cent. of fair adults—the heads becoming shorter and larger, and the hair and eyes darker, with the increasing admixture of "Turkish" or Armenian blood.

So much for the *western* Kurds; we are up to the present very ignorant as to the somatic qualities of the *eastern* Kurds. I have myself only seen a very few Kurds from Persia, but the general impression of some of my scientific friends is that the eastern Kurds show a much higher percentage of darker and round-headed men than the western.

The language of the Kurds is split into many dialects; yet two main groups are to be distinguished, a western and an eastern. Both are related to modern Persian and are typically Aryan. *So, if we ask for the real native country of the Kurds, there can only be one answer: It must be the same as that of our own race, of the race of Northern Europe.* It is not my concern here in this paper to treat of the Aryan problem, and I feel myself utterly free from any Pan-Germanic aspirations in the style of Gobineau and Chamberlain, but still I believe in an old "blue-eyed, fair-haired, long-headed race as in an impregnable complex and not a synthetic accident."²

¹ The greater number of xanthochroic men on the Nimrud-Dagh and in Karakush compared with their smaller number in Sendjirli may be due partly to the splendid, cool climate of these mountain villages.

² Verbally quoted from a paper of R. N. Salaman, "Heredity and the Jew," in *Journal of Genetics*, i, p. 274. The author of this very interesting paper holds the opposite opinion and believes in a "synthetic accident."

And can it be mere accident that a few miles north of the actual frontier of modern Kurdish language there is *Boghaz-Köi*, the old metropolis of the Hittite Empire, where Hugo Winckler in 1908 found tablets with two political treaties of King Šubbiluliuma with Mattinaza, son of Tušratta, King of Mitanni, and in both these treaties *Aryan* divinities, Mithra, Varuna, Indra and Našatya, are invoked, together with Hittite divinities, as witnesses and protectors.

And in the same inscriptions, which date from about 1380 B.C., the King of Mitanni and his people are called *Harri*, just as nine centuries later in the Achaemenidian inscriptions Xerxes and Darius call themselves *Har-ri-ya*, "Aryans of Aryan stock."

So the Kurds are the descendants of Aryan Invaders and have maintained their type and their language for more than 3,300 years.

L. *Tahtadji.*

In Lycia there are about 1,000 families, or 5,000 souls, of a people calling themselves *Tahtadji* or boardcutters—"sawyers." This is indeed their principal occupation. In Western Lycia their Mahometan neighbours call them *Allevi*, a name that is perhaps connected with the word *Ali-Ullahi* or Layard's *Ali-Ilahiya*,¹ meaning people that worship *Ali*. I treated at large of this curious sect in 1889,² so that I can be brief here.

They live high up in the mountains, generally in tents covered with felt, sometimes in round [!] houses, and keep rigidly apart from all the other inhabitants of Lycia. They speak Turkish, are officially regarded as Mahometans, and have also Mahometan names, but they have no inner connection with the creed of Mahomet. They believe in metempsychosis and in good and bad demons. Hares and turkeys are considered as unclean, and the peacock as a sort of incarnation of the devil.

Their somatic qualities are remarkably homogeneous; they have a tawny white skin, much hair on the face, straight hair, dark brown eyes, a narrow, generally aquiline nose, and a very short and high head. The cephalic index varies only from 82 to 91 with a maximum frequency of 86. The mean length-height index is 781, the mean facial index, 876. A typical skull of a *Tahtadji* is figured here, Plate XXXIII.

M. *Bektash.*

Whilst the *Tahtadji* live high up in the mountains of Lycia, a similar sect, the *Bektash*, dwells in the Lycian towns, principally in Elmaly. Their creed has never been exactly studied, and they are very anxious to keep it secret. Like the

¹ A. H. Layard, *Ninereh*, i, p. 296 ss.

² Petersen and von Luschan, *Reisen in Lykien, etc.*, Wien, C. Gerold's Sohn. Partly reprinted in *Archiv f. Anthr.*, vol. xix, 1890.

Tahtadji they affect a certain affinity with the real Moslems, but they never intermarry with them.

I published the measurements of 40 adult male Bektash in my paper on the Tahtadji¹ and quote from it here, that the cephalic index oscillates only between 84 and 89, and the auricular height-index between 74 and 83 with two maxima at 75 and 82. The facial index has a very distinct maximum at 86.

N. *Ansariyeh.*

Exactly corresponding to the Tahtadji and the Bektash in south-western Asia Minor are the *Ansariyeh* = *Nussairiyeh* in Northern Syria.

In some places, as in Antiochia (*ad Orontem*), they are called *Fellah*—from their principal occupation—but have no connection with the Fellah of Egypt. All that is known about their creed is exactly parallel to our knowledge of the Tahtadji, and the same tales of nocturnal orgies, *jus primæ noctis*, and “spiritistic” meetings are told of both groups.

Many Ansariyeh have also in their general appearance a striking likeness to some Lycian Tahtadji. I measured 15 adult men. Their cranial index varies from 80 to 94, with a maximum at 85. Cf. Plate XXV.

O. *Kyzylbash.*

In Upper Mesopotamia and in small groups reaching in the west as far as the High Taurus, near Marash, there is a curious people, living in the midst of Arabs and Kurds, which calls itself *Kyzylbash*, a word that means “redhead” in literal translation. But there are not more red-haired individuals among them than among their neighbours, and their head-dress is not more red than that of any other Oriental group. So the word cannot mean what it seems to mean, and had its origin perhaps in quite another word in another language; in the same way that popular etymology made “ridicule” from “reticula” or, in German, *mutter-seelenallein* from *moi tout seul*. Perhaps linguists will one day find out the real origin and meaning of *Kyzylbash*.

In some places in Western Kurdistan, people that are exactly like the Kyzylbash are called *Yezidi*, and protest that they have nothing at all to do with the Kyzylbash; in other places, so I was told one day at Kiakhta on the Böilam River and again near Diarbekr, that Yezidi and Kyzylbash were two words for the same thing, the one being Arabic, the other Turkish. I do not know if this is correct, but, as far as I could ascertain, the creed and the social condition of both groups are fairly identical. Sir A. H. Layard's classic report on this sect is so complete and exhaustive that I have nothing more to add than a few words on the physical characteristics. They are strangely homogeneous. I was able to measure 189 adult men; only three of them had greyish eyes, all the rest had dark brown eyes, dark hair and tawny “white” skin. Their cranial index varies only from 83 to 92, with a well-defined maximum at 86. The index of the auricular height

varies from 75 to 83, and the facial index from 80 to 90, with a pronounced maximum at 86. I could measure only a few noses; they were all very high and leptorrhine, and so seemed, with few exceptions, all the rest.

So these Kyzylbash are excessively short and broad-headed in the midst of dolichocephalic Kurds and Arabs; their nose, too, is much narrower than that of their neighbours. On the other hand, the Kyzylbash [and the Yezidi] correspond absolutely with the Tahtadji, the Bektash and the Ansariyeh, so that we find a small minority of groups possessing a similar creed and a remarkable uniformity of type, scattered over a vast part of Western Asia. I see no other way to account for this fact than to assume *that the members of all these sects are the remains of an old homogeneous population, which have preserved their religion and have therefore refrained from intermarriage with strangers and so preserved their old physical characteristics.*

Two other sects that are now to be mentioned, the Druses and the Maronites, show in the same way how religious seclusion tends to preserve old physical types.

P. *Druses.*

In the south of Beyrout a great part of the Lebanon and Antilibanos country is inhabited by about 150,000 Druses, who down to our days are to a certain extent independent of the Ottoman Government and enjoy a good many privileges.

Their secret creed has been studied best by S. de Sacy in 1838,¹ and contains, mixed with Jewish, Christian and Mahometan elements, a great many pantheistic conceptions, together with curious ideas on metempsychosis and the repeated incarnation of God, and with remains of the old Oriental worship of Nature. They speak Arabic and pass officially as "Mahometans," having Islamic names, but they have no inner connection with the religion of Mahomet.

Max v. Oppenheim² believes the Druses to be the descendants of "Arabs," immigrated about A.D. 800.

This hypothesis probably conforms to local tradition, but is in direct contradiction to the general impression we get from Druses and from Arabs, and from the result of anthropometric researches. I measured fifty-nine adult male Druses, and not one single man fell, as regards his cephalic index, within the range of the real Arab.

The Druses are all hyper-brachycephalic, with an index oscillating, like that of the Bektash, between 84 and 89 only, with one single exception, an old mischievous and half idiotic pensioner, who pretended to have once been first keeper of the Imperial Plate in Constantinople, and to be a real incarnation of Ali. His index was 76 without a suspicion of synostotic sutures; but he had grey eyes,

¹ *Exposé de la religion des Druses*, vol. ii, Paris, 1838.

² *Vom Mittelmeer zum Persischen Golf*, Berlin, D. Reimer, 1899, vol. i, p. iii ss.

and fell in many other respects so fully out of the line of the homogeneous rest of my Druses, that it seems safe to drop him entirely.

The index of the auricular height ranges from 74 to 84 and the facial index from 79 to 92, with a distinct maximum of 86, with fourteen men in fifty-eight.

Q. *Maronites.*

The northern neighbours of the Druses are the *Maronites*, Christians, generally said to be the descendants of a Monophysite sect, separated from the common Christian Church after the Council of Chalcedon in A.D. 451. Now this council is certainly of the very greatest importance for ecclesiastical history, as it caused the schism between the Oriental world and the Occidental: the Greek, the Armenian and the Coptic church separated from the Roman, because the simple understanding and the sound common sense of the Orientals preferred to accept only *one* nature in Jesus Christ. But this theological dispute gave the name to the Maronites, for they chose a monk, John Maro, to be their bishop after they separated from Rome, but their physical qualities are much older than their religious schism. Indeed, partly through their isolation in the mountains, partly through their not intermarrying with their Mahometan or Druse neighbours, the Maronites of to-day have preserved an old type in an almost marvellous purity. In no other Oriental group is there a greater number of men with extreme height of the skull and excessive flattening of the occipital region than among the Maronites. They are the best specimens of what C. Toldt¹ calls "planoccipital" formation, and very often their occiput is so steep that one is again and again inclined to think of artificial deformation. Indeed I took great care to make sure of this point and examined nearly a hundred babies in their cradles, to ascertain whether or not a particular way of laying the child's head on a cushion might perhaps influence the form of the occiput. No such possibility was found, and we are constrained to regard the extreme "planoccipital" formation of the Maronites (and their relations) as a natural character. Cf. the two types here, Plate XXVI.

I have measured twenty adult males, mostly from Baalbek and from Tarabolus. Their cephalic index ranged from 79 to 91 with an arithmetic mean of 86. The average facial index was 89, the irregular indices running from 75 to 94, with four cases of 87. All were dark.

Having thus treated of a series of smaller groups we can now proceed to the five great groups of Western Asia—Persians, Arabs, Turks, Greeks and Armenians.

R. *Persians.*

Notwithstanding some recent researches our knowledge of the anthropology of Persia is rather scanty. In a land inhabited by about ten millions, not more than

¹ "Untersuchungen über die Brachycephalie der Alpenländischen Bevölkerung," in *Mitteilungen der Wiener anthropol. Gesell.*, vol. xl, 1910, p. 69 ss. and p. 197 ss.

twenty or thirty men have been regularly measured, and not one skull has been studied.

Apart from Kurds, Arabs, and Armenians, each numbering from 200,000 to 300,000 souls, and smaller groups of Nestorians, Lurs, Gipsies, etc., there are two large ethnical groups in Persia, the Shiite and settled *Tajik* and the Sunnite and essentially nomadic *Lilat*. The latter are Turkomans and so is the actual Dynasty of the *Kajar*; the *Lilat*, being the energetic and vigorous element, are the real masters of the land and of the *Tajik*, the descendants of the old Persians and Medes. But long continued intermarriage has produced a great many mixed types. Thus the *Kajars* have sometimes the high aquiline noses quite foreign to real Turkomans.

The old type seems to be preserved in the *Parsi*, the descendants of Persians who emigrated to India after the battle of Nahauband (A.D. 640), of much purer form than among any true Persians. They are all short-headed and dark.

My own measurements are confined to fifteen adult men, Persians of the Diaspora, diplomats, consuls and tobaccoists, whom I occasionally met in Constantinople, Smyrna, Rhodes and Adalia. They were all very dark. Their cephalic indices run: 73, 74, 74, 80, 81, 86, 86, 87, 87, 87, 88, 88, 89, 89, 90. So there is a large majority of brachycephals. I do not lay stress on the three dolichocephalic men, because a great number of Persians whom I saw, without being able to measure, seemed to be brachycephalic. Anyhow it is not impossible that in reality a certain number of Persians—I am very far from saying one-fifth of them—have long skulls. I never saw Persians with light hair and blue eyes, but I am told that in some "noble" families fair types are not very rare.

We know nothing of the physical characteristics of the Achaemenides, who called themselves "Aryans of Aryan stock" and who brought an Aryan language to Persia; it is possible that they were fair and dolichocephalic, like the ancestors of the modern Kurds, but they were certainly few in number, and it would therefore be astonishing if their physical characteristics should have persisted among a large section of the actual Persians. Still we must reckon with the possibility that an early "Aryan" invasion was not quite without influence also on the somatic qualities of modern Persians. Meanwhile much serious scientific work must still be done in investigating the anthropology of Persia ere we can replace mere conjecture by actual certainty.

S. *Arabs.*

In dealing with the peoples of Western Asia, in no case is it more important to keep language and race rigidly apart than when treating of the Arabic-speaking people. Friedrich Müller called all the various elements in Arabia, Palestine, Syria and Mesopotamia "Arabs," merely because they spoke Arabic. Nothing could be more erroneous. The material and mental culture of these tribes and their somatic qualities are widely distinct, and the extent of the Arabic language is infinitely larger than the extent of an Arabic racial element.

But peninsular Arabia is the least-known land in the world, and large regions of it are even now absolute *terre incognita*, so great caution is necessary in forming conclusions, from the measurements of a few dozens of men, concerning the anthropology of a land more than five times as great as France.

My own measurements are confined to thirty-eight Annezeh-Bedouins, whom I met in 1883 in Aleppo, eighteen other Bedawy, generally *Shammar*, camel drivers between Mosul and Alexandretta, twenty Mahometan "Arabs" living in the town Hamah, the site of the first Hittite inscriptions published, and fifteen other Mahometans from Syrian towns. Two, unfortunately very small, groups consist of six priests from Gesyra, whom I met in Aleppo, and five men from Hail in Arabia, whom I was able to measure in Constantinople—in all 102 adult men, sixty-one of them real Bedawy and forty-one settled in towns.¹

The cephalic indices of these "Arabs" ran thus:—

Bedawy	...	38 Annezeh,	68 to 78.
		18 other Bedawy,	71 to 81.
		5 men from Hail,	70 to 74.
Settled in towns	{	20 "Arabs" from Hamah,	85 to 89.
		15 other Mahometans from Syrian towns,	76 to 89.
		6 Priests from Gesyra,	83 to 86.

Remarkably parallel with the cephalic index is the form of the nose in both these groups. The Bedawy as a rule have short and fairly broad, the other "Arabs" have, with few exceptions, high and narrow noses, often of an aquiline form.

What we generally call a "Jewish type" is found very seldom among real Bedawy and very often among the "Arabs" in the towns, but it would be difficult to reduce this statement to a statistical form, as the conception of "Jewishness" is too uncertain and precarious. Two typical Bedouins are figured here, Plate XXVII.

We shall, later on, try to understand the historical connection between these two types, the Bedawy and the other "Arabs." For the moment, we must restrict ourselves to having shown the marked difference that separates them.

T. *Turks.*

It is customary in most European languages to call the Mahometan subjects of the Padishah "Turks." But the word should never be used in this sense without inverted commas; it is more than ambiguous and easily leads to serious misunderstandings.

A Turkoman tribe, the *Othmanli*, commenced from 1289 to conquer a great part of what is now the Ottoman Empire. A good many of the former inhabitants

¹ I have measured seven more "Arabs," but I omit their figures in this statement, because they were of mixed blood or in some way or other pathological.

were then forced to speak Turkish and to turn Mahometans. It is easy to understand that the descendants of the conquerors and of the conquered renegades intermarried freely, and, as the number of the conquering troops was naturally very much smaller than that of the original population, the great bulk of the ten or fifteen, or perhaps more, millions of so-called "Turks" has now the physical qualities, not of the conquering Othmanli, but of the old pre-Othmanic inhabitants.

So the anthropology of Turkey is, like that of Hungary, a typical example showing how language, religion, nationality and race are quite distinct conceptions, and it is interesting to see how they are again and again confounded by the general public and by the press.

In my paper on the Tahtadji,¹ I gave the indices of 187 "Turks" (Turkish-speaking Mahometans) from Lycia, and was able to show that in the mountain villages, and in some swampy marshes not easy of access, people were generally short-headed, and in the towns and on the coast, long-headed. Since then I have measured 569 more "Turks" from Southern Asia Minor and Northern Syria, so that I can now publish the cephalic indices of 756 adult men; they run from 69 to 96; if we count the indices 77 to 81 as mesaticephalic, 172 of these 756 men would be dolichocephalic, 151 mesaticephalic and 433 brachycephalic, with a very pronounced maximum of 77 and 83 men respectively at indices 85 and 86.

These numbers speak for themselves, but it is perhaps useful to study first the corresponding figures for the two large remaining groups, the Greeks and the Armenians, and then to compare the results. Two very different types of "Turks" are figured here, Plate XXVIII.

U. *Greeks.*

What has been said of the "Turks" is valid too in absolutely the same way for the "Greeks" of Anatolia and Syria. Some of them are certainly the direct descendants of old Ionians, Dorians or Æolians, but the greater part are descended from other groups which spoke Greek and had accepted the orthodox religion.

I must here pass over the interesting problem of the Dorian and Ionian wanderings² and must restrict myself to some measurements taken on a series of 179 adult men calling themselves Greek and belonging to the orthodox church. I published this series in 1890, in my paper on the Tahtadji, and reprint here a graphic table showing the frequency of the cephalic indices. It is very striking to see how the curve shows a maximum of twenty-two men with an index of 75, and a second maximum of eighteen men with an index of 88.

Seventy-nine out of the 179 men are dolicho-, eighty-four are brachy- and only sixteen are mesaticephalic. If we reckon the arithmetic mean for the whole series, we get an average index of about 80, closely conforming to Weisbach's

¹ *L.c.* here p. 230, note 2.

² My own private idea is that, contrary to the theory of Curtius, the Ionians came from Europe and the Dorians from Asia, but I shall treat of this subject in another paper.

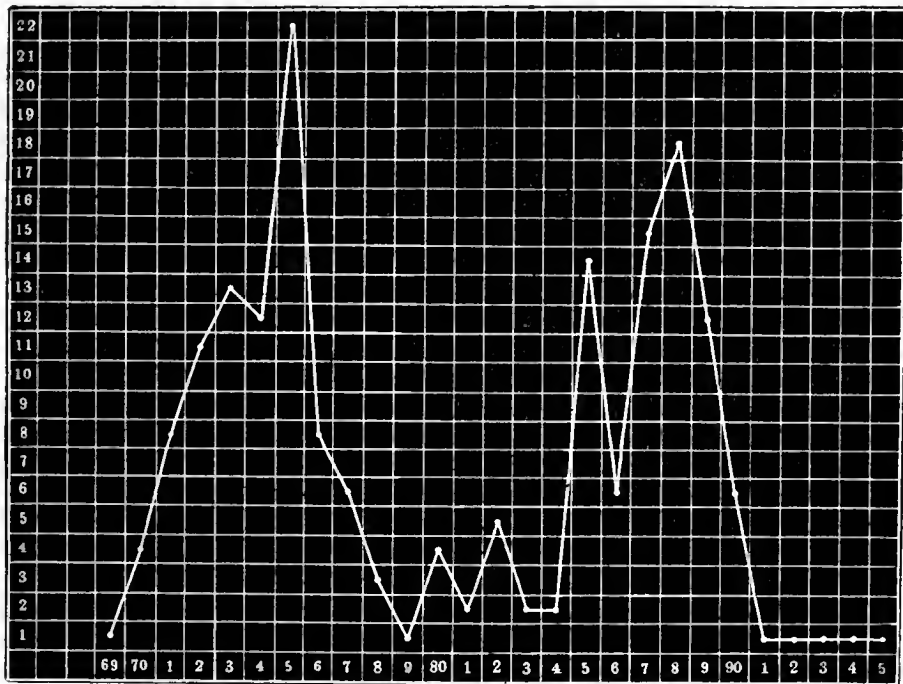
95 skulls of Asiatic and European Greeks with an average index of 81·2, and with the series of Klon Stephanos,¹ who found 80·8 for the Greeks in Europe and 80·7 for the Asiatic Greeks.

It is easily understood how dangerous and mystifying such an average index may be, if the material is composed of individuals from at least two different groups, as it manifestly is.

I am in possession of ninety-three skulls from a modern Greek cemetery in Adalia; they show about the same distribution of indices.

Long before the re-discovery of Mendel and his laws I tried to study the heredity of the cephalic index in the Greek families of Adalia. Here, in the old capital of Pamphylia, there is a large Greek colony, and as I had by good chance been able to give medical help to some of the influential members, I was permitted

TABLE I.



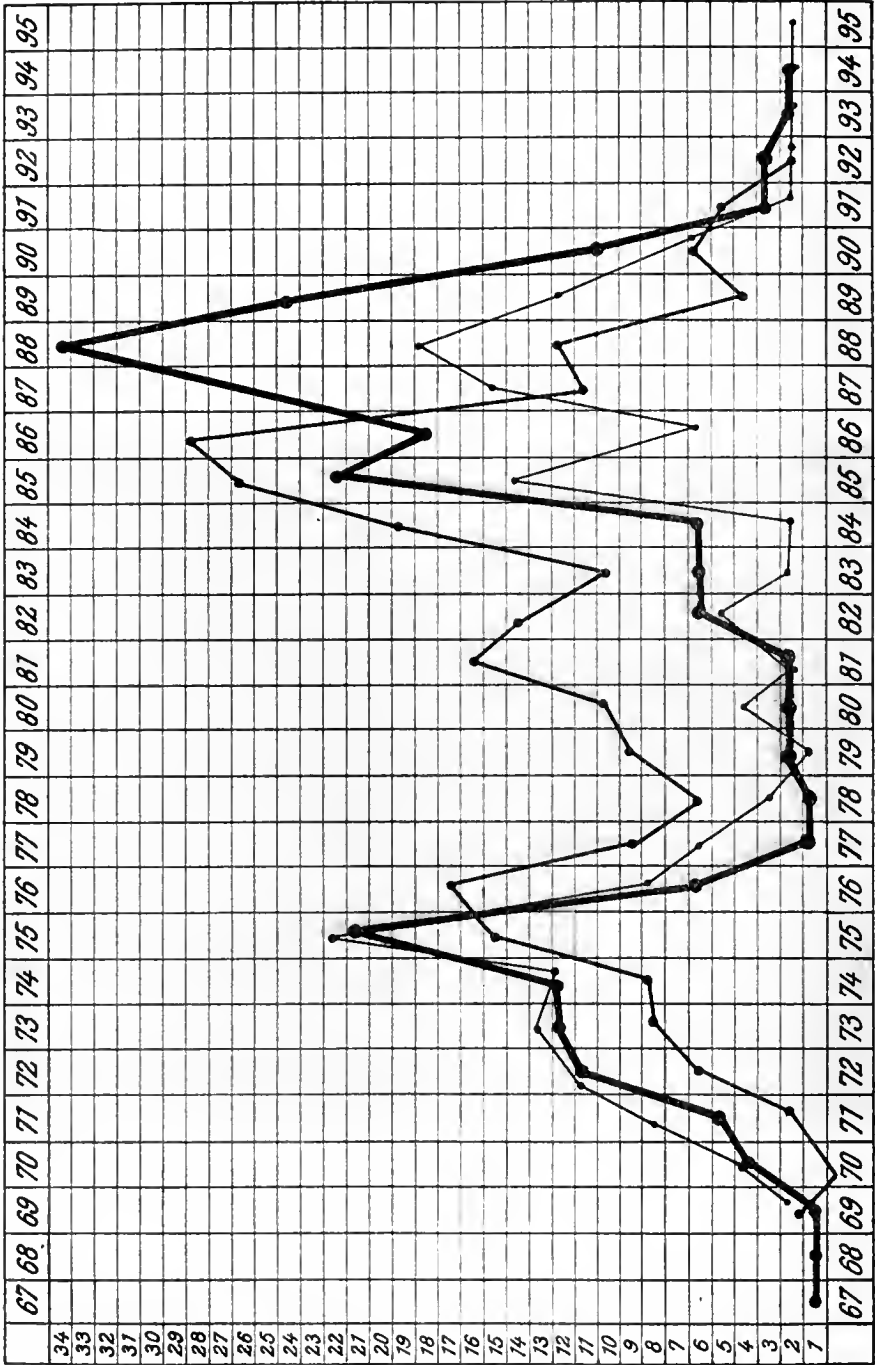
FREQUENCY OF CEPHALIC INDICES IN A SERIES OF 179 ADULT MALE GREEKS.

to measure parents, children and other relations in sixty-seven families. The results were striking. I published a short abstract of them in 1889, in the *Reisen in Lykien*, and in 1890 in my paper on the Tahtadji.

There was a family A; the father had an index of 87, the mother of 73; of the two sons, the elder had an index of 70, the younger 87. In another family, B, the

¹ Article on Greece in *Dict. encyclop. des sciences med.*, Paris, 1884.

TABLE II.
FREQUENCY OF CEPHALIC INDICES WITH GREEKS, TURKS AND JEWS.



1,222 Jews, reduced to one-fifth.

756 Turks, reduced to one-third.

179 Greeks.

brother of the dead father had an index of 70, the mother 86, a son 82, a daughter 75. In a third family, C, both parents were brachycephalic, with indices of 85 and 86. Of their five children, only the youngest daughter was short-headed, with an index of 86, and four elder brothers had long heads with 72, 73, 75 and 73 respectively; 74 was the index of a brother of the mother.

If I now study these sixty-seven families in the light of Mendelian researches, it seems as if neither brachy- nor dolichocephaly were dominant or recessive; they seem to be transmitted now with equal frequency, and this has probably been the case for more than 2,000 years. At least, that is the age of the Greek colony of Adalia and for sixty or seventy generations short- and long-headed "Greeks" have been freely intermarrying. The result was, in many cases, not a mixture, as if we would mix red and white wine, but it was often a manifest reversion to the original types. I called this process "*Entmischung*," but one might perhaps just as well say, "*Spaltung*" or "reversion" or "restitution."

In this way good old types, once fixed by long inbreeding, do not necessarily get lost by intermarriage, but often return with astonishing energy.

The short heads of the Asiatic "Greeks" certainly correspond to the short heads of the "Turks" and of all the Moslem Sectaries described at length in this paper. We shall soon learn to know their real origin. The long heads probably do not belong to one uniform type; some of them are nearly as high as good Anglo-Saxon heads, and can perhaps be compared with the heads of Kurds; other long heads of Greeks are low, like the heads of Bedawy, and I am inclined to regard them as Semitic. They are indeed chiefly found on the sites of old Semitic colonies. In some of these places, as in Adalia, the women wear their hair in many thin plaits, like the old Assyrians, and they are famous for their "Semitic" appearance.

As in ancient Greece a great number of individuals seem to have been fair, with blue eyes, I took great care to state whether this were the case with the modern "Greeks" in Asia. I have notes for 580 adults, males and females. In this number there were eight with blue, and twenty-nine with grey or greenish, eyes; all the rest had brown eyes. There was not one single case of really light-coloured hair,¹ but in nearly all the cases of lighter eyes the hair also was less dark than with the other Greeks.

I did not measure all the Greeks whose eye and hair-colour I noted, but I found that three cases of the blue, and thirteen of the grey or greenish eyes were combined with long heads; but I noted also several cases of blue eyes with very short heads. So it is evident that head form and pigment are transmitted separately. As the number of long and high heads is much larger than the number of fair complexioned it seems permissible to say that with the Asiatic Greeks fairness is recessive in the Mendelian sense. Two different types of "Greeks" are figured here, Plate XXIX.

¹ With the exception of the young men at Symi, who are all flaxen-haired. In summer they dive for sponges, and their hair is bleached by the combined effect of sun and salt water.

V. *Armenians.*

Whilst "Turks" and "Greeks" have been proved to be composed of at least two quite distinct somatic elements, the third of the three great ethnîc groups, which form the bulk of the inhabitants of Asia Minor, the *Armenians*, is comparatively homogeneous.

Of course they also have incorporated in themselves various alien elements, and I know Armenians from Southern Persia who look like Biloch or Dravidians—but as a rule the great mass of the Armenians forms not only a religious, but also a somatic unity.

Particularly in Northern Syria there are places where Armenians resemble one another like eggs. Religious seclusion and, in many cases, life in remote mountain villages, have both contributed to prevent intermarriage with strangers and thus we may assume from the beginning that they represent an old type.

More frequently than any other group in Western Asia they show the "plan-occipital" form of the profile curve, great brachycephaly with extreme height of the skull and a particularly narrow and high nose. Cf. Plate XXX.

They are generally dark; yet of 110 adult men, whom my friend Dr. Assadur Altounyan examined for me in Aleppo, eight had blue, and six "greenish," eyes, and in my own series of twenty-six adult men one had light grey, another greenish, eyes. I have no good statistics on the Armenians from the provinces of Erivan and Nahitshevan in the Russian Transcaucasia, but a great number of the Armenians, whom I occasionally saw from there, had reddish hair and grey or green eyes. I do not know with what elements they may be mixed, and think it safe to omit them here entirely. Also a few "Catholic" Armenians whom I met at Antiochia (*ad Orontem*) are to be excepted from my series, as they have a more prominent occiput; probably they are of mixed origin. If I omit these "Catholics," my series of true Armenians begins with a cephalic index of 83 and ends with one of 96, the maximum of frequency falling clearly at 88.

To this extreme brachycephaly corresponds a facial index oscillating between 77 and 96, with a maximum frequency of 87 and 88, and with an average of 87.5.

A series of twenty-six Armenian skulls begins with a cranial index of 81, ending with one of 91. A very typical skull from this series is figured here, Plate XXXIII, and two good types are reproduced here, Plate XXX.

Summary.

If we now sum up the results of our researches and try to review them in regard to the origin of the different ethnic groups of Western Asia, we need not linger over the Negroes, the Circassians, the Albanians, the Bulgarians, the Bosnians, the Franks and the Levantines. Their origin lies outside the scope of this paper. The same is true of the Gipsies and their kin, but it must be stated that perhaps

one of the nomadic tribes in Asia Minor, the Yuruks, is in some way or other related with them.

Of far greater importance are the Kurds. From the great frequency of fair individuals among them, it is evident that their home must be in the north, and it is probable from their Aryan language that they are in some way connected with the *Mitanni*, who had Aryan divinities about 1280 B.C.

I am well aware that at present there is no real proof or decisive evidence for this statement, but by way of a working hypothesis, I might be allowed to suggest that the Kurds, the *Amorites* of the Bible, the *Mitanni* of the Boghaz-köi tablets and the *Tamchu* of the old Egyptian texts are, if not identical, at least somehow related to one another.¹ About 1500 B.C., or earlier, there seems to have begun a migration of northern men to Asia Minor, Syria, Persia, Egypt, and India. Indeed, we can now connect even Further India with the Mitanni of Central Asia Minor. On the tablets of Boghaz-köi the king of Mitanni not only calls himself and his people *harri*, but he speaks of his noblemen as *mari*, and Hugo Winckler and F. C. Andreas² remind us of the word *marya* for "young man" or "hero" in the Vedic texts. So we find the same Aryan nobles in Mitanni about 1280 B.C., and very much later also in India.

If really, as it seems, the old texts state that the Amorites and the Tamehu were fair, we should thus get a historic explanation of the great number of xanthochroic people we find down to our time everywhere in Asia Minor and in Syria, and among the modern Jews.

Resuming now the thread of this paper, we have a great number of different "Moslem" Sectaries spread over a vast part of Western Asia under different names, as Tahtadji, Allevi, Ali-Ullahiya, Ansariyeh, Fellah, Kyzylbash, Yezidi and Bektash, speaking the different languages of their orthodox neighbours, Turkish, Arabic and Kurdish, but still absolutely homogeneous as to their somatic characteristics. And to this self-same group belong also the Druses and the Maronites. They also have the enormously high and short "planoccipital" heads and the narrow and high noses we find with the Sectaries.

Now this same hypsiccephalic element with the high aquiline noses, which forms the entire stock of all these Sectaries, we find again in Persia, and in a high percentage among the Turks and the Greeks, and in a still higher among the Armenians—everywhere under circumstances that would make it appear to be old and aboriginal, whilst the dolichocephals seem to represent later immigrations.

¹ The latest migration of a European Tribe to Western Asia is that of the *Galatians*. Passing through Roumania, where the town of *Galatz* (*Galati* in Roumanian) has conserved their name, they crossed the Hellespont about 280 B.C. Angora and Gordion were their principal towns and it is not impossible that the latter name, and then also that of the Gordyaeans and of the Kurds, is linguistically connected with that of the Galatians, who might have had earlier precursors.

² *Orientalistische Literaturzeitung*, 1910, p. 289 ss. Cf. also Ed. Meyer, "Das erste Auftreten der Arier in der Geschichte," in *Sitzungsberichte Berliner Akad. der Wissenschaften*, 1908, i.

This theory, based entirely on anthropometric research, is confirmed by historic considerations and by the results of modern excavations. We now know that about 1280 B.C., when Khattusil made his peace with Ramses II., there existed a large empire, not much smaller than Germany, reaching from the Ægean Sea to Mesopotamia and from Kadesh on the Orontes to the Black Sea. We do not know at present if this Hittite Empire ever had a really homogeneous population, but we have a good many Hittite reliefs, and all these, without one single exception, show us the high and short heads or the characteristic noses of our modern brachycephalic groups.

When I first upheld in 1892, in my paper on the anthropological position of the Jews, the homogeneous character of these groups, I called them "Armenoids." But there can be no doubt that they are all descended from tribes belonging to the great Hittite Empire. So it is the type of the Hittites that has been preserved in all these groups for more than 3,000 years, and this is certainly a Jewish type, and corresponds with the old Jewish ideal of beauty as we read in the Song of Songs, VII, 4: "Thine eyes are as the pools in Heshbon, by the gate of Bath-rabbim, *thy nose is like the tower of Lebanon, which looketh toward Damascus.*"

But this Jewish type is not Semitic and is rarely found among the only real Semites, the Bedawy. The Hittite inscriptions have not yet been read, but our Orientalists are unanimous in assuming that there is not the slightest doubt that the Hittite language was not Semitic. These non-Semitic aborigines had their own language, their own writing, and their own religion. Semitic influence is completely absent in the earlier times and is perceptible only later on at different times in the different territories—first in Babylonia, then in Palestine, where Abraham is the ἡγρως ἐπώνυμος of a Semitic invasion, and still later in Northern Syria. Here my own excavations¹ in *Sendjirli*, the old Šamāl, have brought to light a Semitic inscription of King *Kalamu*, son of *Yadi*, from about 850 B.C., invoking *Baal Semed*, *Baal Haman* and *Rekubél*. Another inscription of King *Panamu* from about 800 B.C. on a statue of *Hadad*, praises Hadad himself and four other Semitic divinities, *El*, *Rešef*, *Rekubél* and *Šemeš*.

As Tešup, the great chief-god of the Hittites, is not mentioned in any of the Semitic inscriptions of *Sendjirli*, we may suppose that about 900 B.C., or earlier, independent of the Assyrian conquests, Semitic invaders brought with them *their* language, *their* alphabet, *their* writing, and *their* religion, to Northern Syria—but we know nothing of their number, and we are not able from historical data to form an exact opinion as to how far these invaders could influence the somatic characters of the old Hittite population.

I give here (Plate XXXII) the portraits of a later king of Šamāl, *Barrekub*, from about 730 B.C., and of his queen. The king has certainly not a Hittite profile, and he might well himself be of Semitic origin, but probably a great number of his

¹ *Ausgrabungen in Sendschirli*, Parts I–IV. Berlin, Georg Reimer, 1893–1911.

subjects had preserved the old Hittite characteristics, and even the queen herself looks as if she were not quite without Hittite blood.¹

For the present population of Northern Syria, as well as of all Western Asia, our anthropometric tables show evidence that this old type is still extant in a high percentage among the actual inhabitants.

Only as to the primordial home of the Hittites, or however else we may term all these hypsi- and brachycephalic people with the high and narrow nose, is there some difficulty. The "Alpine race" of Central Europe is certainly somehow related to or connected with them and *a priori* it is not easy to determine if the Hittites came from Central Europe or if the "Alpine race" came from Western Asia. I do not know if the first possibility has many champions left now. If so, they might certainly lay stress on the fact that the modern Armenians and the modern Persians, both typical "Hittites," are now speaking Aryan languages—but we know how often ethnic groups change their language entirely without losing their somatic type, and we can in this special case well imagine that early precursors of the xanthochroic Kurds and their relations may have brought their Aryan language to the old Armenians and Persians, without being able to impress their somatic type upon them.

We should not forget, too, that Europe is only a small peninsular annexe to Asia, and that there are infinitely more typical "Hittites" in Western Asia than there are in Europe. It seems surer therefore to locate the cradle of the Hittites in Asia, where we find extreme brachycephals as far to the East as Burma and Siam and the Malay Archipelago.

We could then also understand how the essential somatic difference between the Hittites and the other brachycephalic Asiatics, their high and narrow nose, originated as a merely accidental mutation and was then locally fixed, either by a certain tendency of taste and fashion or by long, perhaps millennial, inbreeding. The "Hittite nose" has finally become a *dominant* characteristic in the Mendelian sense, and we see it, not only in the actual geographical province of the Alpine race, but often enough also here in England. Certainly, similar noses may originate everywhere, quite independently of the Hittites, by mere mutation, but it seems safer to explain by atavism and by Asiatic or Alpine origin noses like those of the late Cardinal Newman, Ralph Waldo Emerson or Charles Kingsley.

So, to sum up, we see how all Western Asia was originally inhabited by a homogeneous, melanochoic race, with extreme hypsi-brachycephaly and with a "Hittite" nose. About 4000 B.C. began a Semitic invasion from the south-east, probably from Arabia, by people looking like modern Bedawy. Two thousand years later commenced a second invasion, this time from the north-west, by xanthochroous and long-headed tribes like the modern Kurds, half savage, and in some way or other, perhaps, connected with the historic Harri, Amorites, Tamehu and Galatians.

¹ Typical portraits of Hittite divinities, excavated at Sendjirli, are here reproduced on Plate XXXI, and the rock sculpture of Ibriz (*cf.* here Plate XXXII) shows a Hittite God and King, both with extreme "Jewishness."

The modern "Turks," Greeks and Jews are, all three, equally composed of these three elements, the Hittite, the Semitic and the xanthoehroous Nordie. Not so the Armenians and the Persians. They, and still more the Druses, Maronites, and the smaller sectarian groups of Syria and Asia Minor, represent the old Hittite element, and are little, or not at all, influenced by the somatic characters of alien invaders.

Combinations of Philology with Anthropology have in former times, especially through Friedrich Müller and his school, often led to serious mistakes. One spoke of Aryan races instead of people with Aryan languages, and one went so far as to speak of Aryan skulls and of Aryan eyes, so that Max Müller formally protested against the intrusion of linguistics into ethnology, stating that one might just as well speak of a brachycephalic grammar as of an Aryan skull.

Still there is a solidarity between the Historical Sciences and Natural History, and in proof of this solidarity I have ventured this evening—in the spirit and in honour of Thomas Henry Huxley—to give argument and evidence.

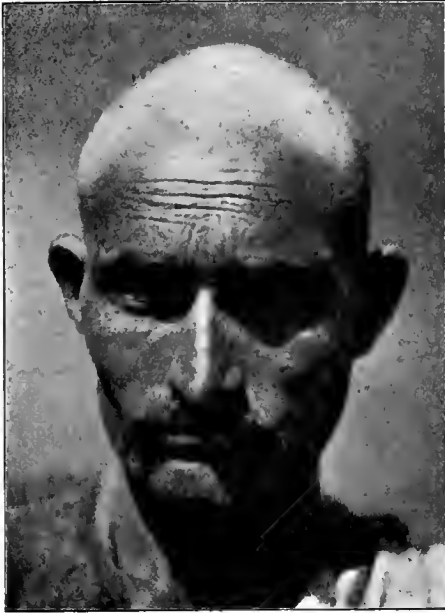


FIG. 1.

IBO, KURD, NIMRUD-DAGH, 1883.

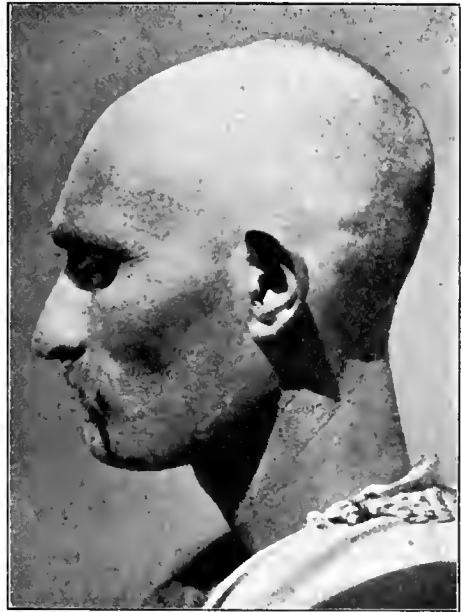


FIG. 2.

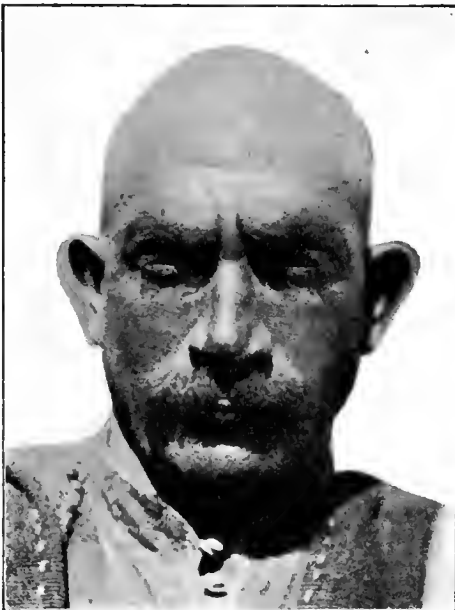


FIG. 3.

BAKO, KURD, NIMRUD-DAGH, 1883.

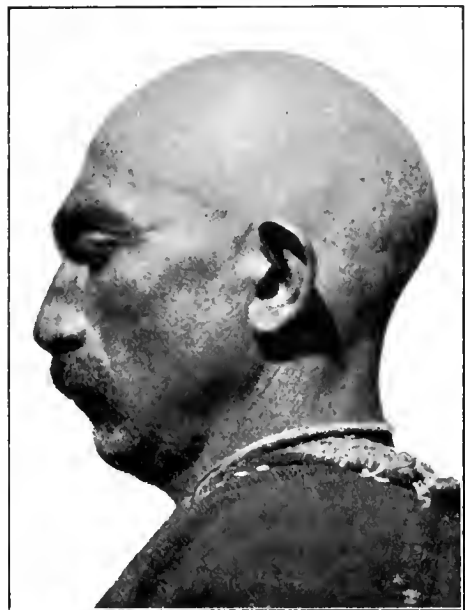


FIG. 4.

THE EARLY INHABITANTS OF WESTERN ASIA.



FIG. 1. SULO, "KURD," ATYPICAL, KIAKHTA.



FIG. 2. ARMENIAN, AINTÁB.



FIG. 3.
HABIB, ANSARIYEH, SCANDeroon.



FIG. 4.

THE EARLY INHABITANTS OF WESTERN ASIA.



FIG. 1.
NEDSHIB HURI, "ARAB," SHUAFAT, LEBANON.



FIG. 2.

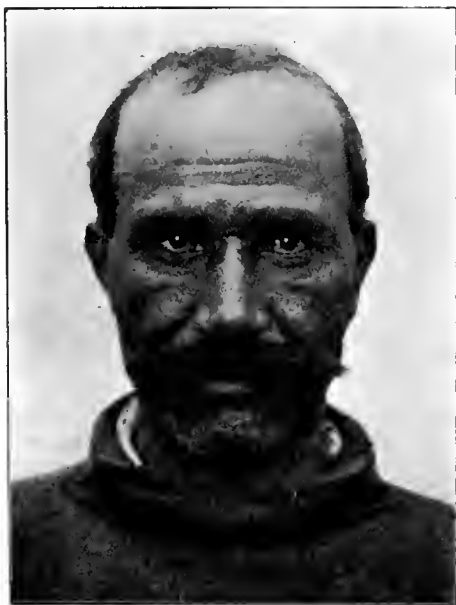


FIG. 3.
IBRAHIM IBN SAÏD, "ARAB," BEYROGT.

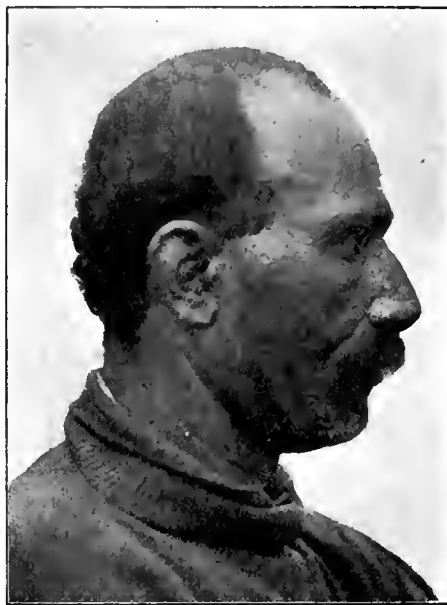


FIG. 4.

THE EARLY INHABITANTS OF WESTERN ASIA.

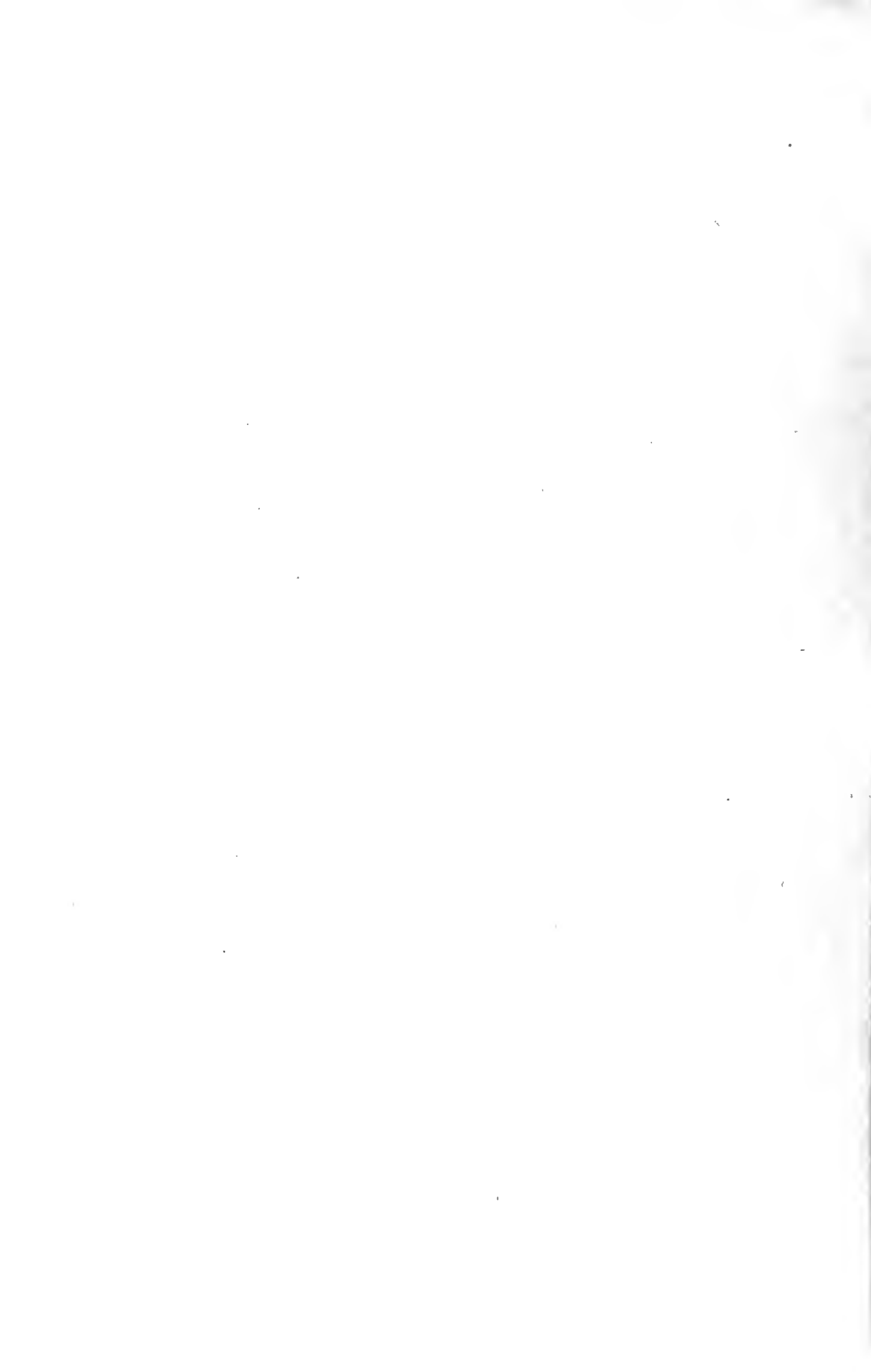




FIG. 1.



FIG. 2.

'ANNESEH—BEDOUIN FROM NEAR BAGHDAD.



FIG. 3.



FIG. 4.

ANNESEH—BEDOUIN FROM NEAR MOSSOUL.

THE EARLY INHABITANTS OF WESTERN ASIA.



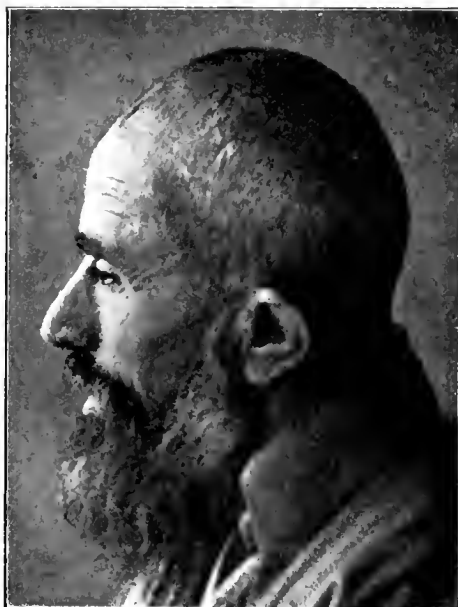
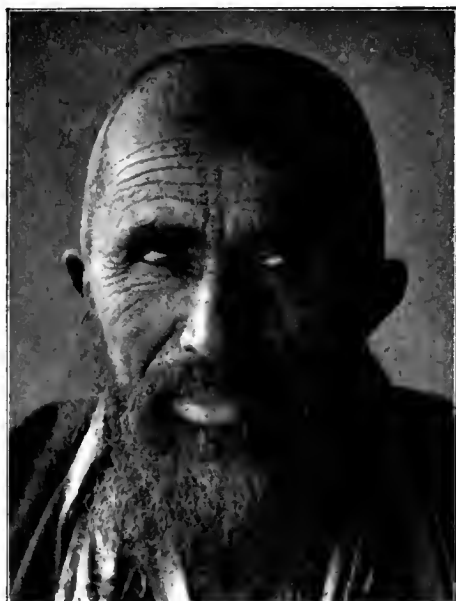


FIG. 1.

FIG. 2.

HADSCHI SULEIMAN, MAHOMETAN, GIRMEN (KPHMNA).

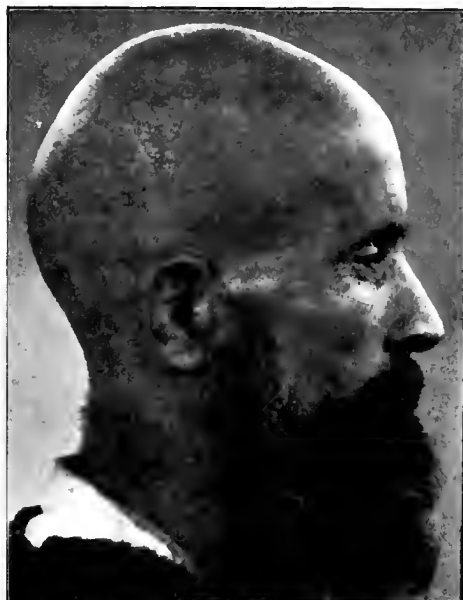
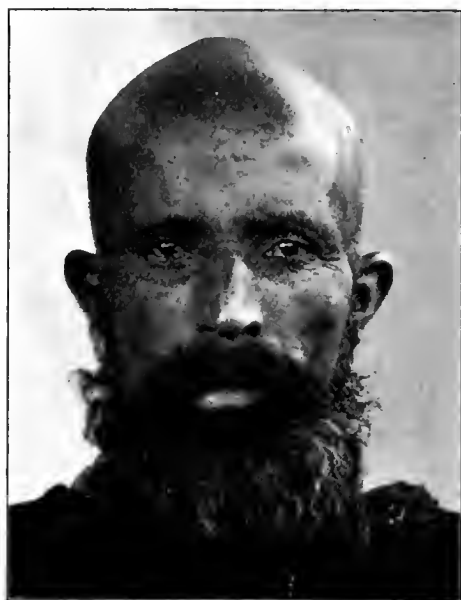


FIG. 3.

FIG. 4.

ALI TSHAUSH, MAHOMETAN, AGHLASAN (ΣΕΛΗ).

THE EARLY INHABITANTS OF WESTERN ASIA.



FIG. 1.



FIG. 2.

GEORGIOS KONSTANTINOU, GREEK, LEVISSI.



FIG. 3.



FIG. 4.

GEORGIOS GLINIS, GREEK, TINOS.

THE EARLY INHABITANTS OF WESTERN ASIA.





FIG. 1.
STEPAN, ARMENIAN, KESSAB, DJEBEL AKRAH.



FIG. 2.



FIG. 3.
KYRIAKOS, ARMENIAN, DJEBEL AKRAH.



FIG. 4.

THE EARLY INHABITANTS OF WESTERN ASIA.





c



b



a

HITTITE DIVINITIES, SENDJIRLI, SYRIA.

THE EARLY INHABITANTS OF WESTERN ASIA.



FIG. 1. HITTITE GOD AND KING, IBRIZ. (With Hittite Inscription.)



FIG. 2.

KING BARREKUB OF ŠAMĀL AND QUEEN, ABOUT 730 B.C. (With Semitic Inscription.)



FIG. 3.

THE EARLY INHABITANTS OF WESTERN ASIA.

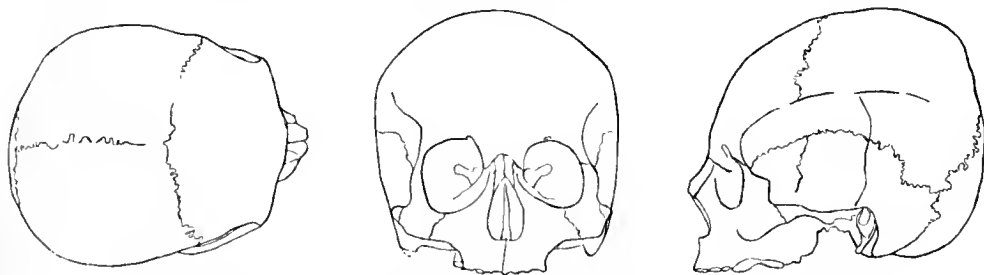


FIG. 1. SKULL OF TAHTADJI FROM NEAR OLD KADYANDA, LYCIA.

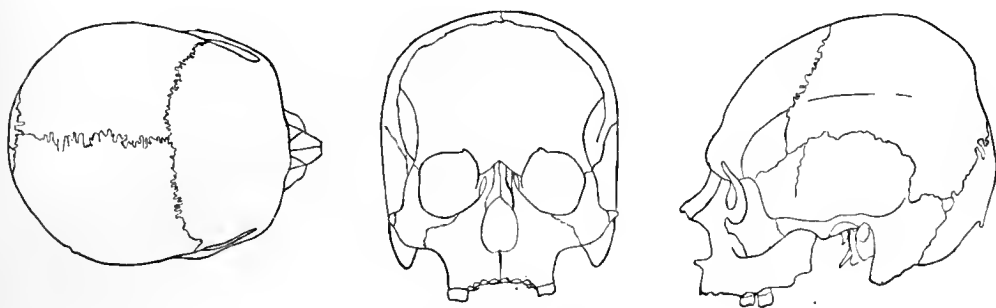


FIG. 2. SKULL OF TYPICAL ARMENIAN.

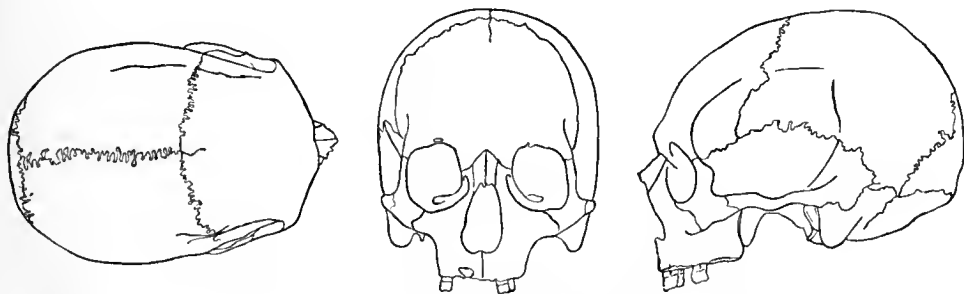


FIG. 3. SKULL OF BEDOUIN FROM NEAR PALMYRA.

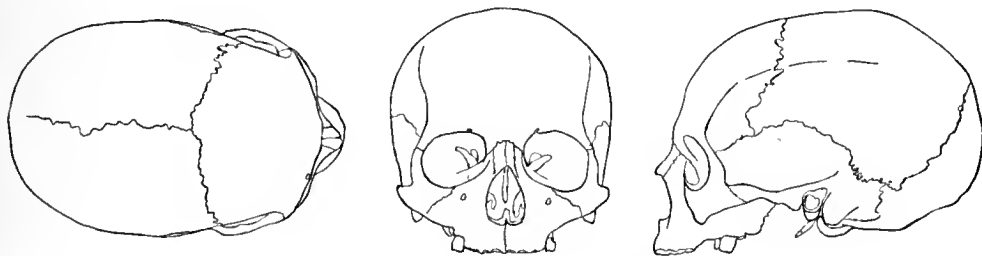


FIG. 4. SKULL OF MODERN "GREEK," ADALIA.

THE EARLY INHABITANTS OF WESTERN ASIA.

THE BUDUMA OF LAKE CHAD.

BY P. A. TALBOT, B.A.

[WITH PLATES XXXIV, XXXV.]

IN the course of an expedition through the Nord Kamerun and French Central Africa, we came to Jimtilo on the Shari, a few miles south-east of Chad. Here—for the first time since my journey on the lake six years before—I came across a Buduma settlement. The inhabitants had however so intermarried with Arab and Kanembu as to have lost nearly all distinctive characteristics.

On the first night after leaving Jimtilo, we arrived at a fishing camp, where we were stormbound for several days. Here the men were of pure race, and most courteous and charming, but it was not till the Island of Kumu was reached that we had a satisfactory opportunity of studying this interesting people under really favourable conditions.

The inhabitants of the island proved to be Guria Buduma. They were polite and friendly, willing to sell us all the curios we wanted, and most eager to welcome us to their island. They showed the liveliest interest in the first white women who had ever appeared on Chad, and seemed to take pleasure in showing us their houses.

The latter were very interesting, and well adapted to the peculiar conditions prevailing. Each little compound was surrounded by a fence of reed, stretched from post to post. Within we found wind screens built at the head of each bed, to keep out, as far as possible, the terrible sand storms and biting winds of the lake.

Their friendliness was the more remarkable, as we were literally the first white people to be welcomed in this fashion. Some French officers had visited the island a few years before, but these only came officially and were received in the same manner. We found the inhabitants willing to oblige us in every way, even to the crucial point of submitting to have their heads measured, though this proceeding could hardly be called popular, and several even remarked tentatively that they would rather not have this kind of medicine tried on their heads—if we did not mind!

Our next stopping was the Island of Bulariga, where the people, Madjagodia Buduma, were even more cordial. The houses here are more elaborately fenced round than those of Kumu, and in some of the compounds we found delightful little gardens. Small sun-shelters were to be seen in nearly all, built for the same purpose as our arbours, so that the people can sit together and chat comfortably out of doors.

In nearly every compound mosquito-proof mats were to be found. These were arranged in much the same manner as those already seen in the fishing camp—but in these permanent settlements they were much larger and higher. So large indeed were they that each was capable of containing a good sized bed, which could be seen beneath the part pegged up to serve as an entrance during the day.

Each house owned one or two ambach floats—great logs of the wonderful *Herminiera daphroxyton* wood, which is so light that a child can hold in its arms half a dozen or more logs, each of which looks heavy enough to form a man's full load. When dry it is one-fifth the weight of cork.

The floats are roughly shaped in the form of a shark, curved upward at the one end, which is carved with a rude head, and narrowing off to a more or less straight point at the tail. On these the Buduma of both sexes lie, and swim almost as rapidly as they could run. Should a man be "wanted" for any reason, such as to answer for "cattle lifting" from the long-suffering Kanembu, all that he has to do is to seize a float and take to the water. He can swim as fast as most canoes could follow, and if he succeeds in reaching one of the many islands, he has only to throw his float over his shoulder, and run across to some spot on the other side, whence he again takes to the water, and is lost to pursuit. Owing to this ease in evading justice the lake serves as a place of refuge for lawless characters from the West and Central Sudan. Indeed it would be difficult to find any spot in the whole world where a man could hide with a better chance of safety, and so little danger or hardship.

Cattle lifting from the mainland seems to be the principal pastime of the Buduma. They appear to have no musical instruments and practically no songs. The nearest approach to music of any sort is a kind of monotonous chant occasionally used to keep time when dancing.

Buduma dances are very peculiar. Men and women stand in two lines, facing one another. The latter advance and retreat, with but slight movements of legs and arms, but the former caper wildly and use their long-sleeved robes, in a kind of butterfly dance. Owing to the heaviness of the cloth, both in colour and texture, the effect is rather bat-like.

Strangely enough, intoxicants seem to be unknown to these islanders. Apparently, even for their greatest festivals, milk is the only drink provided.

One legend as to the origin of the Buduma states that they are descended from the Fulani. It is said that one of the head chiefs of this tribe had a quarrel with his wife, because he declared that the son she had borne was so black, that it was impossible to regard him as his own offspring. As the child grew up, the chief steadily refused to acknowledge him, and so painful did the lad's position become, that no sooner had he reached manhood than he set out alone, to explore the then uninhabited islands of Chad. On one of these he built a hut, and, after living in solitude for a time, visited the mainland, in search of a wife. His resentment against the Fulani was too strong to allow him to seek his bride from

among them, so he turned to the Sos, from whom the present day Kotoko are descended. After some time he succeeded in persuading a very beautiful maiden of this tribe to accompany him back to his island. From this couple all the Buduma are supposed to have sprung.

Another legend as to their origin is related by Captain Tilho, namely, that a Kanembu, Bulu by name, fell in love with his sister-in-law during the absence of his elder brother, who had gone on a pilgrimage to Mecca. As the latter's return was delayed, the pair took his death for granted, and went through a form of marriage. On the husband's return Bulu feared punishment for his misdeed, so he fled to Lake Chad, and lived in hiding on one of the islands. He was obliged to live on fish or such small game as he could snare, till one day a great calabash of millet was found entangled in the reeds which fringed his place of retreat. Bulu thought that this must have been blown over from the western shore, and therefore determined to go thither and procure a supply of grain. He was captured on landing and taken before the head chief of the Sos, who treated him kindly. The chief had a beautiful daughter named Saïorom, from whom perhaps the peninsula takes its name. Bulu repaid his host's kindness by making love to the girl, with the result that her father was obliged to give her to him and send them both back to Lake Chad in order to conceal the disgrace which had befallen his family.

It is somewhat singular that such an event should have been looked on as a disgrace, when one considers the leniency with which pre-nuptial ties are regarded among so many black races. Even among present day Buduma, however, a child born out of wedlock is looked on as a disgrace, and must be drowned. If this is not done, great misfortunes will happen to the tribe. All the men will fall sick and the women, cows and goats will become barren.

There is no prejudice against the birth of twins. Such an event, on the other hand, is the occasion of great rejoicing. A cow is sacrificed, thanksgivings are offered up and a great feast made for the friends of both parents.

On the birth of each child, the husband makes his wife a present of a cow. The infant is carried, almost at once, to the house of the wife's mother, where it stays as long as it needs feeding and attention. So soon, however, as it can feed and look after itself it goes back to its parents, and if the father has not already chosen a name for it, he does so on the occasion of its return. More than one name is never given.

To celebrate marriage a great "play" is held. This lasts for three days, during which the bride sits in state. At sundown on the third day she is led to her husband's house, and so long as she remains beneath the shelter of his roof is expected to remain faithful to him. Divorce, however, is easy and frequent. All that is needed is for the successful lover to repay the presents made on the occasion of the first marriage, and the woman is at once free to contract other ties.

The recognized wedding gifts are as follows:—The groom gives four cows to the father of his bride and five Maria Theresa thalers to her mother. The bride

herself receives from him one cow, which must be in milk. The father and mother give as dowry, two or three cows, two gowns, two sets of undergarments, four mats and two small girl slaves.

Each man may have four or five free wives and almost any number of slave wives, according to his means. The average, however, is not more than two to three in all. Contrary to the information given to Captain Freydenberg we were assured that all Buduma clans intermarry, but should one of them wed a woman of another race she never follows him home, but remains with her own people on the mainland, while her temporary spouse goes back to his island.

The eldest brother of a dead man succeeds to all the wives of the deceased and shares the property with the latter's children. The brother gets half for himself and the other half is divided between the children. The eldest son gets a share—*i.e.*, he takes the finest cow, the biggest spear, the best boat, etc.

The Mohammedan religion is supposed to prevail all over Chad, but, side by side with this, many old pagan beliefs and customs still hold their ground. For instance, all the southern Buduma worship the *Karraka* tree, called *Karagu* by the Kanuri. This is a kind of acacia and the largest tree that grows in the Chad region. Nothing would persuade a native of these parts to cut or burn it. From its leaves a magic "medicine" is made, which is supposed to cure all ills. In some ways the Buduma resemble the Ibo and Ekoi in this particular, for they revere the *Karraka* in much the same way as the former do the *Oji* tree, and the latter the cotton trees, which raise their giant height above all the great trees of the deep Southern Nigerian bush.

When approached by the proper rites the Buduma believe that the spirit of the tree has power to grant petitions. One way of ensuring a favourable answer is for a "medicine man" to grind corn and mix it with milk in a bowl. Then he digs a small hole at the foot of the tree, and sets the offering within. The petitioners approach and wait humbly while their request is made: usually this is that more children shall be granted, or that the cattle may multiply. Often, however, a youth or maiden will come to the foot of the sacred tree, and after shyly placing their offering, beg that the heart of the one whom they favour may be turned to them. Should this means fail, however, others may be employed, for the Juju men drive a thriving trade in love philtres and ointments.

When a girl wishes to indicate to a man of her tribe that she is prepared to listen to his proposals, she weaves one of the wonderful bottle-shaped baskets of plaited reed, and carries it to his house. These love-gifts are woven in beautiful patterns, and are so fine that they hold water without the loss of a drop. Should the man accept the offering, the pair proceed to the house of the girl's parents, and a marriage is arranged on the earliest opportunity.

When one of the inhabitants of a village dies, his nearest relations gather together, and make a rude coffin. First the hair and nails of the dead man are carefully cut off, and hidden in the ground in some secret place. This custom also obtains among living persons. The corpse is then washed with hot water, and

wrapped in white cloths, after which it is laid on its side in the coffin, with the hands—placed palms together—between the knees. For the whole of the next day, from sunrise to sunset, the people bewail their dead. Then the coffin is lowered into a deep hole which has been dug for it not far from the dwelling-place, and as the last shovelful of earth falls in, the village once more returns to its every-day affairs in the comforting belief that the soul of their late companion has gone to a place of happiness—for there is no hell in Buduma theology, only heaven for all.

The Kotoko bring slaves to Jimtilo, where they sell them to the Buduma. These are usually pagan and are often brought from beyond Ham on the Logone. They are generally either of the Sara or Niellim race. Arab, Fulani, or Kotoko are never enslaved in these parts.

The three principal tribes of the Buduma are the Madjagodia, the Maibulua and the Guria. The latter are subdivided into the Mama Guria, the Magana Guria, and the Bujia Chilim, or black Bujia, who dwell toward the north. The principal towns of the Madjagodia are Kan and Bulariga Kura—or Big Bulariga—and of the Maibulua—Yiribu and Ngaloha.

The chief industries of this interesting people are tending herds of cattle—many of which, in true border fashion, they have raided from the Kanembu—and fishing. The latter occupation is, however, principally carried on by slaves. Their daring raids were formerly the terror of the mainland, and in spite of the Pax Britannica, even the twentieth century has not yet deprived life of its thrills in these regions. One of the most picturesque of the inhabitants of Kumu consented, on promise of safe conduct, to accompany us to the Kanembu town of Kaua, as we were anxious to learn all he had to teach us about the customs, legends and beliefs of his people. It was amusing to watch the provocative air with which, safe in the protection of the “white man,” he swaggered up and down among the Kanembu, who, as he naively confessed, before agreeing to go with us, wanted “very bad” to catch him, because he “take from them plenty, plenty fine cattle many time.”

The Buduma have an uncanny reputation on the mainland, as they are thought not only to be amphibious, but to have the power of approaching unnoticed any canoe which ventures to intrude upon their domains and dragging down its occupants to death in the waters beneath.

To the Buduma themselves even, Chad has its terrors. Other dangers lurk below the surface beside the giant fish—some with blood-red scales and mouths armed with teeth almost as long and pointed as those of a shark.

The lake is avoided as much as possible after dark, lest one of the terrible Djinnns, a hundred feet long, with fearful face and great arms, should suddenly appear before any belated fisherman. These genii have a way of springing upon the unwary and dragging them down to their dwelling-places beneath the water, or of slapping them across the face with a long thin hand. Should this last happen to a man he would do well to go straight home and set his house in order, for on the morrow he will surely die. Curiously enough, the Djinnns which are supposed to

inhabit the great *Kuka* trees of Bornu are said to bring death on those who offend them, in just the same way.

Their belief is that all the first men sprang out of the earth much as a tree sprouts, while the Djinnns and all supernatural beings were water-born. There seem to be traces of some mysterious connection between the first parents of Mankind and the *Karaka* tree—but no one was willing to explain how it came about. Ghost stories seem utterly unknown among this people. Those questioned on the subject appeared astonished at the thought that the living could, under any condition, see or hold communion with the dead. One man answered with an amused smile, "To see dead men I must die too, for the dead never come back to us."

On the other hand they hold that a knowledge of the future and of the unseen world is sometimes sent to people in dreams, and those supposed to possess this power of second sight are much looked up to, and often consulted by their less gifted brethren.

Both men and women have clear-cut, refined features, but the women are on the whole the best-looking. Some of the latter wear elaborate coiffures and a great many earrings of the "gipsy" type; the men wear only one, in the left ear. This is a crescent-shaped silver disk, narrow at the overlapping points which pierce the ear, and broad beneath, often with a simple dog-tooth pattern incised upon it.

Both sexes wear heavy bracelets and anklets of iron, brass, or silver, and many toe and finger rings. All metal work is obtained from the mainland, usually from Bornu.

The name Buduma seems to be derived from *Budu* (reed) and *Ma* (man). This is applicable enough, considering that the people dwell in a region of reed, and that papyrus and rushes play a most important part in their economy of life.

The wonderful Buduma canoes are made entirely from smooth straight papyrus stems. A thick bundle is bound together by native rope to form the keel, and from this the boat is gradually built up. Only a single length of papyrus is used for small craft, but for larger ones two or even more are needed. Those intended for cattle transport have an additional thick "float" built out on either side at the level of the water. This is several feet wide at its broadest, but narrows to stem and prow.

Frail as these craft appear at first sight, they are quite watertight, and so stable as to withstand even the violent storms which rage on Chad at times.

Another industry, which almost vies in importance with boat-building, is the preparation of the great curved Ambach shields, without which no journey is undertaken. These are used not only as a protection when fighting, but as a shelter from the wind, when sleeping out of doors. Thin planks of green wood are laid to soak in water, and roughly pressed into the required curve by means of heavy stones. The planks are then sewn together with strips of raw hide, and a square of this is fastened on both sides in the centre of the shield. A handle is fixed at the

back, and smaller pieces of skin, usually cut into squares or diamonds, ornament the outer surface.

The Kotoko also use Ambach shields, but of quite a distinct type, more graceful in shape and with finer ornamentation—so fine indeed that at a little distance it produces the effect of having been cut from thin sheets of bronze. These are taller and less curved than those of the Buduma, probably because they are never needed for other than fighting purposes.

A Buduma vocabulary is attached. The resemblance between this language and that of the Kotoko seems further to bear out the legends already given as to the origin of the Lake people. A series of measurements is added in the hope that it may prove of interest to compare the Buduma with their neighbours the Kotoko, Kanembu, Kanuri and Arabs. Later, time may be found to work these out, together with the measurements of all other tribes studied during the expedition. I venture to hope that these may throw some little light on the relationship between the Central Sudan races and the Pagans to the south and west.

GURIA-BUDUMA VOCABULARY.

The orthography adopted below is that used by the Royal Geographical Society. The main rule is that vowels are pronounced as in Italian and consonants as in English. The acute accent marks the syllable on which stress should be laid.

Vocabulary of Guria-Buduma.

Yes, <i>Iwadan.</i>	1,000, <i>dubu kette.</i>
no, <i>imadainja.</i>	man, <i>hokwoli.</i>
not,	woman, <i>ngjirrim.</i>
1, <i>kette.</i>	child, <i>wuli.</i>
2, <i>kii.</i>	father, <i>lugudumu.</i>
3, <i>kákanu.</i>	mother, <i>yavi.</i>
4, <i>hagai.</i>	brother, <i>k'wik'ia.</i>
5, <i>hlinji.</i>	sister, <i>chimmbi.</i>
6, <i>haraka.</i>	son, <i>bugorr.</i>
7, <i>tulór.</i>	daughter, <i>labia.</i>
8, <i>hawakv.</i>	friend, <i>kvanihau.</i>
9, <i>hiliga.</i>	enemy, <i>kettehau.</i>
10, <i>hakan.</i>	chief, <i>mai.</i>
11, <i>hakan a kette.</i>	king, <i>koromi.</i>
12, <i>hakan a kii.</i>	sorcerer, medicine-man, priest, <i>kurne-</i>
20, <i>hagu.</i>	<i>bukerr.</i>
30, <i>hakan kakanu.</i>	head, <i>korau.</i>
40, <i>hagai kakanu.</i>	hair, <i>njiggu.</i>
100, <i>aru.</i>	eye, <i>yill.</i>

nose, *shenne*.
 mouth, *gati*.
 tooth, *henne*.
 shoulder, *ngoru*.
 back, *kaiya*.
 skin, *haurigu*.
 heart, *gaiibu*.
 liver, *nrnun*.
 bone, *ahai*.
 blood, *chii*.
 war, *kirigu*.
 spear, *luti*.
 club, *makari*.
 bow, *kirinigu*.
 arrow, *kapi*.
 shield, *galago*.
 house, *ngóindo*.
 boat, *'fom*.
 food, *ambi*.
 beast, *húu*.
 bird, *kado*.
 fish, *ki*.
 fire, *áúu*.
 water, *amaii*.
 river, *kaiyu*.
 sea, *kolukome*.
 earth, *láo*.
 mountain, *kauu*.
 stone, *ganari*.
 tree, *wani*.
 forest, *wani kalin*.
 sky, *kamani*.
 sun, *yerau*.
 moon, *hula*.
 star, *shilogu*.
 cloud, *mburha*.
 wind, *ahi*.
 rain, *amai*.
 thunder, *baramil*.
 lightning, *amaledji*.
 day, *kabugga*.
 night, *kurnimm*.
 shadow, *kagumi*.

breadth, *yeenchudu*.
 soul, *aro*.
 spirit,
 ghost, *kararam*.
 god, *hauu*.
 word, *mana*.
 thing, *wataganku*.
 part, *yapeyu*.
 whole, *ga chaw*.
 I, *dau*.
 thou, *de*.
 he, *káuu*.
 she, *wu*.
 it,
 we, *damu*.
 you, *dogóii*.
 they, *dogóíiba*.
 who, *nawoni*.
 which,
 this, *yima*.
 that, *atau*.
 large, *dumu*.
 small, *gunneni*.
 many, *damu*.
 few,
 all, *haide*.
 long, *kapi*.
 short, *kabuga*.
 high, *kapi*.
 low (*not high*).
 hard, *kellmai*.
 soft, *kullehai*.
 light, *kabadai*.
 heavy, *tobai*.
 quick, *aurukói*.
 slow, *ambelekkule*.
 loud, *kangiddianai*.
 sweet, *ali*.
 bitter, *aliya*.
 bright, *wumna*.
 dark, *irau*.
 black, *chilimm*.
 white, *bol*.

red, *keme*.
 blue, green, *kili*.
 yellow (*not red, not white*).
 good, *nehengangela*.
 bad, *abi*.
 beautiful (*same as "good"*).
 ugly (*not "good"*).
 wise, *angal*.
 foolish, *gachalangaiya*.
 new, *kuli*.
 young, *nakaiamba*.
 old, *nauwaraba*.
 true, *kurni*.
 false, *ngagulor*.
 to be,
 go, *wull*.
 come, *aiiu*.
 stand, *mai*.
 sit, *jai*.
 lie, *henai*.
 walk,
 run, *hogodu*.
 touch, *tamagin*.
 smell, *napu*.
 taste, *tummgummina*.
 see, *gaminaba*.
 hear, *gashangaba*.
 speak, *aiibu*.
 sing, *gangelada*

dance, *geikanua*.
 eat, *gegama*.
 drink, *hiami*.
 sleep, *henai-guane*.
 dream, *geirrigi*.
 be born, *gauwiwilli*.
 marry, *gunniga*.
 live, *aiyu*.
 die, *namatu*.
 fight, *babaii*.
 strike, *haaguchalam*.
 cut, *paiyu*.
 burn, *kanjai*.
 kill, *hella*.
 give, *cheno*.
 take, *waii*.
 do, *wanana*.
 make, *goganana*.
 carry, *waro*.
 love, *geligu*.
 hate, *giau*.
 fear, *gaháuehinba*.
 wish, *helimm*.
 command, *wellguru*.
 tell, *giribaii*.
 think, *kurni*.
 believe, *akul*.
 know, *wohiena*.

BUDUMA.

No.	Name.	Tribe.	Town.	Age.	1	2	3	4	5	6	7
1	Bukara ...	Guria Buduma ...	Kumu ...	35	142	192	127	42	61	45	118
2	Halish ...	" "	" "	35	143	202	143	49	55	42	108
3	Dallah ...	" "	" "	30	128	188	134	41	61	45	101
4	Momodo ...	" "	" "	45	139	198	134	45	60	42	110
5	Dallah ...	" "	" "	40	138	196	135	38	61	41	111
6	Bukar ...	" "	" "	40	141	185	135	40	62	39	100
7	Ali ...	" "	" "	45	142	193	136	43	62	43	111
8	Malam ...	" "	" "	45	142	199	146	48	69	44	120
9	Suni ...	" "	" "	55	137	188	133	39	62	51	120
10	Mara ...	" "	" "	55	143	192	143	51	64	46	113
11	Baf ...	" "	" "	45	154	194	140	44	74	52	123
12	Aji ...	" "	" "	50	141	191	145	45	65	43	114
13	Bodi ...	" "	" "	40	136	188	139	42	61	43	106
14	Malam ...	" "	" "	50	140	189	140	43	60	48	113
15	Abdallah ...	" "	" "	55	142	193	138	44	57	41	105
16	Momodu ...	" "	" "	55	132	193	140	50	69	49	111
17	Dogai ...	Madjagodia Buduma	Bulariga	50	139	190	144	44	65	47	112
18	Ali ...	" "	" "	55	144	200	137	45	65	50	117
19	Ali ...	" "	" "	50	140	191	143	47	69	50	117
20	Gala ...	" "	" "	30	133	185	128	41	67	48	102
21	Mbe ...	" "	" "	45	135	186	130	40	60	46	101
22	Ali ...	" "	" "	35	141	197	140	44	70	45	115
23	Dili ...	" "	" "	35	142	194	140	47	65	46	110
24	Daii ...	" "	" "	35	136	188	139	42	70	49	114
25	Mata ...	" "	" "	45	141	190	137	48	71	47	126
26	Waro ...	" "	" "	30	141	195	140	42	60	43	107
27	Shari ...	" "	" "	35	141	188	137	44	68	49	109
28	Kandera ...	" "	" "	40	137	198	133	42	63	45	103
29	Ali ...	" "	" "	35	139	187	136	45	72	51	120
30	Chudabu ...	" "	" "	45	136	190	136	47	61	41	104
31	Buru ...	" "	" "	45	140	189	141	42	65	35	106
32	Mbe ...	" "	" "	40	142	204	146	43	73	39	103

BUDUMA.

8	9	10	11	12	13	14	15	16	17	18	19	20	Remarks.
122	567	1777	1814	2, 3	3	1	3	2	2	3	0	0	Slight indentation all round head above level of temples.
128	543	1732	1798	2, 3	3	1	3	1	2	3	1	0	
122	526	1719	1775	2, 3	3	1	3	2	2	3	0	0	
125	559	1765	1844	2, 3	3	1	3	1	1	3	1	0	
124	552	1628	1719	2, 3	3	2	3	2	2	3	1	0	
122	554	1602	1667	1, 5	2	1	3	1	1	3	0	0	
126	551	1616	1778	2, 3	2	1	3	2	2	3	1	0	
133	566	1735	1839	1, 5	2	1	3	1	2	3	1	0	
127	546	1730	1835	2, 3	3	1	3	1	2	3	1	0	
128	541	1834	1899	2, 4	2	0	3	1	1	3	1	0	
128	554	1756	1961	2, 4	3	1	3	1	1	3	1	0	
125	554	1726	1897	2, 4	2	0	3	2	1	3	1	0	
127	543	1811	1905	2, 3	3	1	3	2	2	3	1	0	
120	549	1684	1859	1, 5	3	2	3	2	2	3	1	0	
121	546	1719	1918	1, 3	3	2	3	2	1	3	1	0	
125	528	1747	1937	1, 3	3	1	3	2	2	3	1	0	When men get pains in the head small supplementary cuts are made on the forehead.
130	546	1722	1854	2, 5	2	0	3	2	2	3	1	0	
127	561	1821	1932	2, 3	3	0	3	1	2	3	1	0	
125	549	1672	1803	2, 4	2	2	3	1	2	3	1	0	
116	523	1682	1735	2, 4	3	1	3	2	2	3	0	0	
124	521	1719	1869	2, 3	3	0	2	2	1	3	1	0	
125	564	1773	2006	1, 5	2	2	3	2	2	3	0	0	
121	554	1768	1889	1, 3	3	2	3	2	1	3	0	0	
124	541	1832	1994	2, 3	2	1	3	2	1	3	0	0	
128	554	1756	1915	2, 3	2	2	3	2	1	3	1	0	
121	544	1735	1847	1, 3	3	2	3	1	1	3	0	0	
126	541	1799	1899	2, 4	3	1	3	2	2	3	0	0	
124	551	1784	1965	1, 4	3	1	3	1	1	3	1	0	
122	541	1731	1861	2, 4	2	1	3	2	2	3	1	0	
124	526	1751	1905	2, 4	2	0	2	2	2	3	1	0	
123	544	1719	1953	1, 4	3	0	2	2	1	3	1	0	
123	569	1886	2029	2, 3	2	1	3	2	1	3	0	0	

KANEMBU.

No.	Name.	Tribe.	Town.	Age.	1	2	3	4	5	6	7
33	Abdulla ...	Kanembu ...	Jimtilo ...	35	148	195	147	47	58	41	110
34	Mailim ...	" ...	" ...	35	144	196	131	41	67	54	117
35	Bura ...	" ...	" ...	40	139	201	146	47	65	47	115
36	Musa ...	" ...	" ...	40	135	197	134	40	67	48	109

KOTOKO.

37	Kobo ...	Kotoko ...	Mani ...	40	143	204	151	51	69	44	123
38	Mai ...	" ...	" ...	45	137	203	142	46	72	48	122
39	Momod ...	" ...	" ...	30	135	193	130	46	52	38	101
40	Momon ...	" ...	" ...	30	139	184	133	47	67	44	113
41	Abani ...	" ...	" ...	30	140	197	135	46	58	36	106
42	Momod ...	" ...	" ...	40	153	194	146	48	63	54	114
43	Bukar ...	" ...	" ...	33	143	203	135	48	69	49	133
44	Madam ...	" ...	" ...	25	146	183	135	45	63	45	110
45	Iman ...	" ...	" ...	30	134	188	136	42	75	50	120
46	Liman ...	" ...	" ...	30	143	196	130	43	60	39	109
47	Abadi ...	" ...	" ...	45	147	193	146	48	64	44	122
48	Damsa ...	" ...	" ...	45	147	195	138	47	73	52	127
49	Gagaga ...	" ...	" ...	35	148	197	138	47	71	50	122
50	Orinyan ...	" ...	" ...	25	140	187	133	42	61	42	115
51	Momod ...	" ...	" ...	45	134	191	134	47	61	43	126
52	Helebia ...	" ...	Gulfei ...	45	148	183	141	46	62	42	114
53	Alamido ...	" ...	" ...	40	144	187	144	43	62	41	113
54	Naiim ...	" ...	" ...	50	143	198	138	41	63	46	121
55	Bukar ...	" ...	" ...	50	140	190	128	44	68	45	113
56	Lima ...	" ...	" ...	55	146	193	140	46	59	44	106

KANEMBU.

8	9	10	11	12	13	14	15	16	17	18	19	20	Remarks.
131	571	1732	1809	2, 5	2	1	3	1	1	3	1	0	} Very slight indentation.
131	566	1887	1875	2, 3	3	0	3	1	1	3	0	0	
133	571	1625	1710	2, 3	3	1	3	1	1	3	1	0	
126	556	1794	1844	2, 3	3	1	3	2	2	3	1	0	

KOTOKO.

134	568	1882	1914	1, 4	3	2	4	2	1	3	0	1	} Bridge of nose very deeply indented.
135	563	1844	1980	2, 4	3	1	4	1	2	3	0	1	
123	535	1707	1818	2, 3	2	1	4	1	2	3	0	0	
125	525	1839	1989	2, 3	3	1	2	2	2	3	0	0	
128	551	1791	1987	2, 3	2	2	4	2	2	3	0	0	
128	553	1976	2916	2, 3	3	2	4	1	1	3	0	1	
134	558	1999	2108	2, 3	2	1	4	2	2	3	0	0	
124	528	1682	1766	2, 3	2	2	4	2	1	3	0	0	
126	548	1682	1729	2, 3	2	2	4	2	2	3	0	0	
132	546	1857	1876	2, 3	3	1	4	2	2	3	0	0	
128	551	1778	1971	2, 3	2	1	4	1	2	3	0	1	
127	554	1737	1956	2, 3	3	1	2	1	1	3	1	0	
131	566	1818	1965	2, 3	3	1	3	1	2	3	1	0	
119	541	1684	1802	2, 3	3	1	4	2	2	3	0	0	
122	541	1788	1907	2, 3	3	0	2	2	2	3	1	0	
129	544	1849	1874	2, 3	2	1	3	2	1	3	1	1	
120	544	1765	1859	2, 3	2	1	3	2	1	3	1	0	
129	566	1862	1940	2, 4	2	0	3	1	1	3	1	1	
120	541	1849	2019	1, 5	3	1	3	1	1	3	1	1	
134	545	1722	1859	2, 4	3	0	3	1	1	3	1	1	

KANURI.

No.	Name.	Tribe.	Town.	Age.	1	2	3	4	5	6	7
57	Moru ...	Kanuri ...	Birguma ...	30	134	183	138	49	58	40	117
58	Umara ...	" ...	" ...	35	145	192	138	45	66	43	105
59	Ali ...	" ...	" ...	45	142	195	135	44	67	44	118
60	Moidu ...	" ...	" ...	45	145	193	133	50	63	40	110
61	Musa ...	" ...	" ...	23	137	189	135	40	55	38	100
62	Gapcha ...	" ...	" ...	30	143	193	125	45	66	48	109
63	Mastaba ...	" ...	" ...	22	141	195	138	46	68	48	117
64	Mataba ...	" ...	" ...	22	146	185	131	45	61	42	108
65	Ali ...	" ...	" ...	20	142	186	129	44	59	43	101
66	Ali ...	" ...	" ...	28	140	188	130	40	60	43	117
67	Musa ...	" ...	" ...	20	144	196	125	43	65	46	116
68	Bura ...	" ...	" ...	25	142	179	136	42	62	46	101
69	Ali ...	" ...	" ...	35	137	183	135	43	60	40	103
70	Wadigumbo ...	" ...	" ...	35	135	180	125	37	69	48	115
71	Eirina ...	" ...	" ...	50	137	193	134	47	64	45	110
72	Ali ...	" ...	" ...	25	137	188	135	40	61	43	105
73	Musad ...	Arab ...	Jintilo ...	44	144	193	137	48	68	45	117
74	Bukare ...	" ...	" ...	45	143	191	136	45	68	51	122
75	Avokaresse ...	" ...	" ...	50	141	194	136	42	67	47	116
76	Abadum ...	" ...	" ...	55	143	203	147	47	67	49	120
77	Jibiri ...	" ...	" ...	50	148	186	138	47	67	50	120
78	Momod ...	" ...	" ...	50	147	187	140	40	58	46	112
79	Dana ...	" ...	" ...	50	141	198	137	44	65	47	113
80	Salaman ...	" ...	" ...	50	142	198	144	46	66	47	123
81	Abukari ...	" ...	Ngama ...	25	146	158	141	49	58	43	109
82	Mahmoud ...	" ...	" ...	25	138	193	141	44	61	42	109
83	Derman ...	" ...	" ...	40	147	197	137	44	73	57	127
84	Isa ...	" ...	" ...	35	143	206	138	48	69	53	110
85	Delai ...	" ...	" ...	45	140	204	142	45	72	52	124
86	Gauut ...	" ...	" ...	48	149	194	140	39	66	48	113
87	Talaf ...	" ...	" ...	35	139	194	137	44	65	49	112
88	Sali ...	" ...	" ...	45	157	186	144	43	63	51	110
89	Mohammed ...	" ...	" ...	45	141	193	133	48	65	45	119
90	Moumoud ...	" ...	" ...	35	146	192	143	41	66	49	110
91	Adam ...	" ...	" ...	22	139	185	133	44	69	45	115



FIG. 1. KURIA BUDUMA, ISLAND OF KUMU.



FIG. 2.



FIG. 3. MADJAGODIA BUDUMA, ISLAND OF BULARIGA.



FIG. 4.



FIG. 5. MADJAGODIA BUDUMA, ISLAND OF BULARIGA.



FIG. 6. BUDUMA HOUSE AT KUMU, LAKE CHAD.

THE BUDUMA OF LAKE CHAD.



FIG. 1. KOTOKO CANOE IN WHICH THE EXPEDITION CROSSED LAKE CHAD.

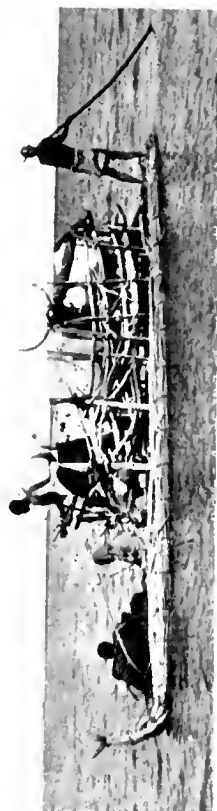


FIG. 2. BUDUMA BOAT WITH CATTLE, LAKE CHAD.



FIG. 3. BUDUMA SWIMMING ON AMBACH FLOAT.



FIG. 4. FRAME OF MOSQUITO SHELTER, LAKE CHAD.



FIG. 5. BUDUMA ENCAMPMENT, MOUTH OF THE SHARI.

KANURI.

8	9	10	11	12	13	14	15	16	17	18	19	20	Remarks.
122	521	1709	1782	2, 3	2	2	3	1	2	3	0	0	Indentations round top of heads.
127	567	1706	1905	2, 4	2	2	3	2	1	3	1	0	
131	567	1713	1782	1, 4	2	0	3	2	2	3	1	0	
123	554	1602	1671	2, 3	3	2	4	1	2	3	1	0	
126	536	1679	1834	2, 3	2	2	3	2	1	3	0	0	
123	543	1654	1837	1, 3	2	2	4	1	2	3	0	0	
125	567	1602	1648	2, 4	2	2	4	1	2	3	0	0	
120	540	1589	1625	1, 4	2	2	4	2	2	3	0	0	
123	540	1622	1696	2, 3	2	2	3	3	2	3	0	0	
125	526	1599	1649	1, 5	2	2	3	2	2	3	1	0	
117	551	1654	1779	2, 3	2	2	4	3	3	3	0	0	
115	523	1635	1714	1, 4	2	2	3	2	1	3	1	0	
120	523	1684	1784	2, 3	2	2	3	2	2	3	1	0	
120	520	1625	1806	2, 3	3	2	2	2	2	3	1	0	
130	543	1628	1706	1, 4	2	2	3	2	2	3	1	0	
122	538	1709	1854	2, 3	2	1	2	2	1	3	0	0	
125	551	1785	1866	2, 3	3	0	3	1	1	3	1	0	
128	551	1651	1756	2, 3	3	1	3	1	1	3	1	0	
126	546	1727	1756	2, 3	3	1	3	1	2	3	1	0	
139	569	1740	1975	1, 5	2	1	3	2	2	3	1	0	
119	549	1659	1805	1, 4	3	1	3	1	1	3	1	0	
127	543	1722	1753	1, 4	3	1	3	2	2	3	1	0	
126	552	1882	1969	2, 3	3	1	3	2	1	3	1	0	
132	564	1788	1879	2, 3	2	1	3	1	1	3	1	0	
120	525	1750	1882	2, 4	3	1	3	2	1	3	0	0	
131	533	1788	1831	1, 3	2	1	3	2	2	3	0	0	
122	553	1813	1897	1, 3	3	1	3	2	2	3	0	1	
126	571	1890	2027	1, 4	3	1	3	2	2	3	0	0	
134	571	1737	1803	1, 4	3	1	3	2	2	2	0	1	
127	558	1681	1773	2, 4	3	1	2	2	2	3	0	1	
125	553	1729	1793	2, 3	3	1	3	2	2	3	0	0	
120	553	1712	1788	1, 4	3	1	3	2	2	3	0	1	
126	546	1737	1823	1, 3	3	2	4	3	2	3	0	1	
124	551	1742	1823	1, 3	3	2	3	2	2	3	0	1	
126	533	1663	1778	1, 4	3	2	3	3	2	3	0	0	

PREHISTORIC AND ABORIGINAL POTTERY MANUFACTURE.

By REV. J. W. HAYES.

THE great difficulty of understanding how symmetrically formed pottery could be produced without the use of the wheel—as had been asserted in America, Africa and New Guinea—caused me, some three years ago, to take up this question; and during the time devoted to its investigation—stolen, shall I say, from that claimed by a busy parish?—a number of curious and instructive facts came under notice. Firstly, that on the plainest and most abundant evidence, the nimble fingers of the aboriginal women, so dexterously manipulated coils of plastic clay as to produce remarkably well-formed and beautiful vases of different kinds. Secondly, that vessels can actually be beaten out, and thus increased in diameter some inches, after they have left the wheel; and in the third place that much of our British barrow pottery, and cooking utensils, has been made in sections, afterwards pressed together and joined by what is known as “slip” (or liquid clay); but I do not consider that there is sufficient evidence to prove the adoption of the coil method in our islands. Incidentally we will see, that the law of Evolution, as a factor in progress, runs through the history of pottery, just as through the vegetable and animal worlds.

We are so used to regarding vast establishments and great staffs of workers as necessary to pottery making in England, that it is quite a revelation to go into some of the more obscure districts in this country, and see men at work on a small scale and with poor, mean appliances. For instance, in the summer of 1909, when visiting in Dorsetshire, I saw at the works of Mr. Seth Symm, of Verwood (near Wimborne), the workmen making large, thick milk pans and water basins, coating them afterwards with a heavy coarse yellow glaze. In the process of manufacture clay was brought from the marshes, and thrown into a tank, where boys jumped in barefooted, and teased it with their toes, mixing up sand with the clay, and treading out the material as men tread grapes in a wine vat. When sufficiently “teased,” lumps of it were thrown on a thick wooden wheel, and moulded by the potter into different shapes, the only tool used in this case, besides the twine to cut the article off the wheel when finished, being a piece of hoop iron to scrape the edges of the pot. The crank of the wooden wheel was turned by a lad, who simply used a stick for the operation; and the firing was done in a very rough kiln, kindled from the ground, with furze bushes and old timber, no coal being burnt. Mr. Bayley, Mr. Gulliver and Mr. Frederick C. W. Fry, of Verwood, use the same simple means of manufacture, and indeed the latter turns out no less than eighty distinct patterns with no other tool but a comb to score the sides, the edges, rims, handles, and ornaments being well executed with the fingers alone.

All this pottery is of a bright red colour, and is packed in the kiln, from the ground level, one vessel on the top of the other, the largest underneath, and the smaller sizes inside the larger, rims downward, no flues being used. The edges of many of the vessels are artistically pinched by the operator, much in the same way as an old-fashioned cook pinches the edges of a piecrust to give it a symmetrical appearance.

Messrs. Greenwell and Rolleston say that the barrow pottery was not baked in a kiln but "at an open fire." Moreover, that "they have all been handmade, not one showing any sign of the use of the wheel." This is certainly true, for not only can such vessels be made, symmetrically, without a wheel, but they can, as we shall see, be remarkably well "fired" without what is now known as a kiln.

That they can be used by being merely sun dried (although this opinion was formerly held by some) is, however, against the weight of evidence, and even amongst the primitive natives of North Africa is unknown. Sun-dried vessels quickly disintegrate, not having their material chemically changed by fire.

Of course in many cases of the barrow and mound pottery the firing is very imperfect, and portions of the vessels are blackened more than others, but the cause of this we shall see later, when we note the process of manufacture elsewhere.

Most writers on the subject hold that the first attempts at pottery consisted in smearing a calabash outside with thick plastic clay, and so using it as a sort of mould; or else smearing a wickerwork basket inside with plastic clay and then burning the wickerwork away.

Professor Otis T. Mason, in the *Origin of Inventions*, calls pottery "the child of basketry," and there is much to be said in favour of this theory, for there are distinct marks of basketry on much of the pottery exhumed from the American graves.

Mr. Francis W. Reader, who has for years made a speciality of the subject, is of the same opinion, and indeed in British Columbia and Washington, the Indians are clever enough to make water-tight basket pots of fibre and birch bark cemented with a sort of resin, which pots they use for boiling their food, by putting in red hot stones, gipsy fashion; and these vessels are well able to withstand the heat, being most durable. The Oregon Indians, and several of the Californian tribes, do likewise, and such pots were used in Europe.

We must remember, always, that many of the native women potters (and a great deal of the prehistoric pottery of the most artistic design was executed by women), after forming a vessel, ornamented it outside with basket-work patterns by pressing a basket mat upon the plastic clay, and beating the design on to the surface with a mallet. This was a usual custom, and so we find patterns of fishing nets, ribbed leaves, carved objects and rope marks impressed upon pottery. But, what methods were followed to form the body of the pot or urn, in districts where the wheel was not yet known (although there are numerous biblical references to it, the wheel being known in Asia from time immemorial)? Well, at least three

distinct methods are known, besides the basket-frame mould. The first is, where a solid lump of prepared clay is placed in a semicircular bowl, and moulded by the fingers, much in the same way as the modern potter moulds an article on his wheel, the native potter in his primitive way, turning the bowl or platter round with his hand, to give the vessel a somewhat circular shape.

The second method is to press the clay into wooden half moulds and afterwards join the two halves with some liquid clay, while the third and most interesting method of all, is to make coils of prepared clay after the pattern of a baker's dough roll, each coil being about 12 inches or so long, and then proceed to build up the pot or urn coil by coil, reducing the diameter or increasing it at pleasure.

Mason gives us a very neat account of it, p. 166: "The Caribs are very skilful potters. The manner of their working is precisely that of the Pueblo people of the United States, only the Caribs commence the work by laying out a flat circular sheet of clay on a small piece of board; the rest of the material is rolled out, between the palms of the hands, into long cylindrical pieces, as thick as a man's thumb. One of these rolls is laid round the edge of the circular foundation so as to stand up like the rim of a tray. This is made solid, smoothed up and other rolls added until the whole is complete."

Some few writers on Anglo-Saxon prehistoric pottery admit that the ware shows signs of having been manufactured in sections, especially Greenwell and Rolleston, viz., p. 63: "Some of the vessels seem to have been made from one mass of clay, and at once, but others show that they were formed by separate pieces laid together; the sides, as it were, gradually built up, some made of two coats, one pasted over the other." I myself have seen very distinct marks of the sections on some prehistoric pots in the British Museum through the kindness of Mr. Joyce and Mr. Reginald Smith, while the partially obliterated marks of the joining could be still observed all round the interior, where they had not been malletted smooth.

In Brazil, Southey (*History of Brazil*) says that the women are very skilful potters, moulding, drying, ornamenting, and firing them afterwards. "There are some," he writes, "in Brazil who bury their dead in jars, large enough to receive them erect." This statement could be scarcely credited if we did not know from writers in the *Journal of Indian Art* and other sources that jars of this huge size are still made by the natives of India, but these are usually made for household use to contain oil, milk, water or meal. W. Andrews, F.G.S. (in *Ancient Pottery Remains in Warwickshire*), says, "the oldest pottery that I have seen is the urn used to contain the ashes of the dead, at a time when cremation was practised long before the time of the Roman Empire."

There is no need to question this fact, as all antiquaries are agreed thereupon; but pottery of that period was not made exclusively for the service of the dead. It only argues that few of the vessels of domestic use, save those preserved in mounds or barrows, have come down to us. We can trace rough, as well as exceedingly fine, handmade pottery over very wide areas indeed.

T. W. Man (in *Ancient Monuments of Honduras*, p. 108) states that "a potter's

wheel is never used there." Dr. Bartholomew (in Art. 47, *Man* for 1903) says the same of the Khonmu pottery of Tunisia. Mr. J. Halkin asserts the same in reference to the Congo, viz., "On the Congo, pots are made without a wheel" (*Man* for 1907, Art. 100, p. 175).

Then we have the evidence of Messrs. Skeat and Blagden in reference to Malay art, viz., "There is no clear record of any form of pottery having been manufactured by any of the Aborigines" (*Pagan Races of the Malay Peninsula*), showing that primitive man could do without pots of any kind, handmade or otherwise. De Morgan and Swett, referring to the Negritos, tell us that these tribes have no knowledge of this kind of manufacture. Coming now to Japan we learn that pottery there was "moulded by hand" but burnt in very imperfect fashion (viz., Milne, *Stone Age in Japan*).

Considering how difficult it was, without some rotating appliance, to make anything like a circular vessel, Dr. Barnard Davis (in *Peruvian Pottery*, p. 96) astonishes us by writing of the natives that "they had considerable skill, for they did not possess the famous and ancient potter's wheel. It is all made by hand and there is no doubt that, like the pottery of the ancient Britons, it was made by the labour of the women's delicate fingers." The author also alludes to the imperfection of the baking and the black colour of most of it. In the latter case, he is of opinion that this is due to an oxide introduced into the clay, but when we come to speak of kilns we will find other and more satisfactory theories to account for the dark colour of much of the ceramic (prehistoric and native) ware.

Other writers, bearing testimony in reference to purely handmade pottery, are as follows:—Professor W. H. Holmes on *The Chiriqui Indians* (*Bureau of American Ethnology* for 1884), Dr. Stevenson on the Zuni and Shinūmo pottery (*Bur. Am. Eth.* for 1880), Dr. Thomas on the Cahōkia pottery (*Bur. Am. Eth.* for 1890–1), E. H. Man on the "Nicobar Pottery" (*Journ. Anthropol. Inst.*, vol. xxiii, 1894) and many more.

The clay chiefly used in ceramic industries comes from the beds of creeks, lakes, ponds, and marshes. In some parts of the world this is used almost in its crude state, after being well beaten out or kneaded with the hands or feet, but, in other parts, the stiff brown clay is mixed with sand, powdered stone and shells, as well as grey, red and black clays of a different nature. These ingredients improve the quality of true potter's clay considerably, not merely making it more plastic, but preventing the vessels from cracking afterwards in the fire. (See C. F. Binns in *The Potter's Craft*, 1910.)

There are several other ways of toughening the raw material and also toughening the partly finished pot. Thus, Prof. W. H. Holmes tells us (in *Bur. Am. Eth.* for 1893) that "pottery formerly supposed to have been moulded in baskets or bags was really wrought in much simpler fashion. The markings supposed to indicate the texture of bags or baskets being produced by beating or pressing with simple sticks or paddles with cord, such beating or pressing greatly improves the texture of the clay."

Later on we will note several devices used in different parts of the world to toughen the sides of pots, so as to resist more effectually the after results of fire, where the vessels were intended to be used for boiling food.

The pots referred to were, of course, superior to the basket pots of the Mandan and Arikaree Indians, whose women boil both maize and meat in these receptacles by the simple expedient of putting hot stones into the water in the basket pot until the liquid boils (see D. I. Bushnell in *Primitive Salt Making in the Mississippi Valley*, 1907). There were several steps in the evolution of the potter's wheel before it reached its present well-known form, of a circular steel disk, driven by lathe mechanism or even by steam. The aborigines seemed to have used at first a sort of platter, laid on the ground and turned by the hand as occasion required; no pivot was used nor permanent rotary machinery.

There is a good deal of evidence for this in parts of India, but one of the best descriptions of the mode of working is from the pen of Dr. C. G. Seligmann, viz.: "The almost perfect symmetry exhibited by the prehistoric pottery as a whole, to judge from the larger fragments, must give rise to the question, whether the use of the wheel was known (in British New Guinea). But apart from the fact that the wheel is unknown in Melanesia, the women of Mōtu stock, at the present day, make narrow mouthed vessels (in some cases with bodies approximately spherical) of perfect symmetry by the simple expedient of giving an occasional turn with one hand to the board or fragment of old pot upon which the lump of wet clay is supported." ("On Prehistoric Objects in British New Guinea," *Anthropological Essays*, 1907.)

A circular wooden platter, then flat slab or large shell, was the first step in the development of the wheel. Evidence of the next step comes from the East. Mr. Edgar Kiernander, a deputy commissioner, to whom I wrote for information on the point, describes two chief sorts of wheel, *i.e.*, a single wheel made of clay, wood, or metal, and revolving on a pivot, set twirling by the hand and continuing its rotation for about seven minutes at a time, and also a second type called the double wheel.

The latter is placed in a pit dug for the purpose about 4 feet deep, the potter sitting on the side of the pit, and keeping the upper wheel revolving by turning the lower disc with his toes. This enables him to maintain a constant steady rotation of the working slab, and avoids the necessity of cranks, levers, or additional help. If the potter is too poor to purchase a metal wheel he can easily make one for himself of stiff tenacious clay, about 3 feet in diameter and 3 inches thick, but he usually mixes the clay with plenty of goat's hair and either inserts cross bars of bamboo to strengthen the disc, or inlays a flat circular piece of slate or stone in the upper surface as a working table to throw the lump of clay upon. Such a wheel as this can be made practically for nothing and lasts from three to five years.

The latter or double wheel on a single axle has this great advantage, that it leaves the operator both hands free all the time, while in the case of the single

wheel the operator has to remove his hand from the lump from time to time in order to spin the wheel or else employ a girl or boy to do it for him. Wilson (in *Prehistoric Man*) mentions an approximation towards the potter's wheel which I do not see mentioned elsewhere. It consisted of a stick of wood grasped in the hand and turned round to and fro inside a thick wall of clay, made by the hand. This would certainly give a nearly circular form to the interior of the pot, and is quite an ingenious contrivance.

Before we go on to speak of kilns we must note the different mixtures of clay used. Dr. Frank Russell, in his article on the Pima Indians (p. 126, *Bur. of Am. Eth.*, 1904), tells us that these people mix, with stiff clay from the river bottom, pulverised potsherds. The analysis of the clay there shows for grey pottery, namely, silica 59·64, alumina 18·58, ferric oxide 6·72, and for red pottery, silica 74·75, alumina 12·55, ferric oxide 5·28. It is curious to note that the composition of the Essex Red Hill burnt earth is very similar, Mr. J. H. B. Jenkins, F.C.S., giving it as follows, viz.: Silica 75·8, alumina 12·5, oxide of iron 5·7, and the chemical analysis of the surrounding marsh gives the same proportions, roughly speaking.

Besides sand and the ingredients mentioned before, the Eskimo, according to Nelson (*Bur. Am. Eth.* for 1896), mixes with the clay short blades of marsh grass. Hartland says the same about the Hottentots (*Man*, Art. 35, 1907). Mason tells us that the Pueblo women crush shells, mica and old pottery for mixing. This is called "tempering" the clay, and it decidedly minimises the risk of breakages during the time the pots are in the fire.

From the *Journal of Indian Art*, No. 41, 1893, we see that in the Punjab salt and saltpetre are used, "one part to 100 parts of clay." Another substance is the down of the bulrush, and in the North-West provinces of India they use rice, cow dung, ashes, strange clays of a different texture, powdered flints, limestone, rotten paper, crushed bark, cotton wool, chopped straw, &c. From ancient times these substances have been found advantageous to prevent fractures from shrinkage, even when drying in the sun.

Much of the coarser kinds of Germanic and Ancient British pottery show signs of an admixture of chopped straw. I have in my possession several portions of what may have been barrow urns or saggars from Foulness Island, where there are some small burnt earth mounds (or were), and in these fragments can be plainly seen the little cavities left by the grasses after they had burnt away. The Rev. T. Longley, who has interested himself in searching for pottery fragments in the Salterns, beside the marshes of Lincolnshire, writing in the *Louth Advertiser* of April 7th, 1900, states that the pieces he found show abundant impressions of chopped grass from the sand dunes. I believe that Mr. F. W. Reader noticed the same peculiarity in the rough pottery or *lutig* found at Langenhoe, and at Goldhanger Creek, Essex.

The clay, as taken from the river marshes or embankments, does not seem, except in rare cases, to have been used without considerable kneading. In the Punjab

it is dried, pounded with a wooden or stone pounder, teased with the hands or feet, and thoroughly sifted through a sieve. Sometimes the clay is washed; that is, water is mixed with it, in large quantities, and the liquid is allowed to stand until the coarser grains fall to the bottom. The finer sediment is then dried for use.

We will now suppose a pot to have been formed, with or without the wheel, by any of the processes already known (*i.e.*, by either the single lump, the sections the half moulds or the coil process).

What is the next step in the manufacture?

Well, in India the pot, if not of sufficient capacity, is next, before being sun dried for a few days, hammered out with small mallets, or a round stone and a mallet (one held inside and the other outside) to increase its diameter. Thus a vessel whose diameter, when it left the wheel, was, say, 2 feet 6 inches, is hammered out at its widest part until it attains a diameter of 3 feet 5 inches, others are enlarged in this way, say, from 3 feet 3 inches to 4 feet 4 inches.

But, one may ask, why not run it on the wheel, the full size at once? Because the clay is so soft, at first, that the potter cannot possibly mould the walls thin enough and still retain the shape, and moreover the beating out toughens the wall, and makes it closer and firmer. It has been denied that clay vessels can thus be enlarged, but the fact is unquestionable in native pottery abroad. Most operators at the wheel, when the body of the vessel is completed, cut it off the wheel by passing a wire or twine between the surface of the wheel and the under surface of the vessel, but in parts of India the curious custom obtains of cutting off the vessel about an inch or so above the wheel, so that the urn or whatever it may be, comes off bottomless, and the bottom must be attached somehow or other afterwards.

At first sight this appears to be a stupid idea, but on close examination we find it has a practical use, for the new bottom is formed by beating the lower edge out and over, until it completely covers the aperture left by cutting the first bottom off, and the repeated hammering hardens the very part which has to stand the most wear or friction. Mr. H. R. C. Dobbs, C.S., in *The Pottery and Glass Industries of the North-West Provinces and Oudh*, describes the process thus: p. 4. "A large vessel such as a *gharra* or *handi* is only roughly formed on the wheel, its sides being much thicker and its whole shape narrower than that of the finished vessel. The rough shape, while still damp, is rounded and enlarged by being beaten out with a pestle (*pindi*) and mallet (*thapia*).

"The pestle is an earthenware disk with a round handle and the mallet represents a thick, flat, wooden ladle. The pestle is held in the left hand, against the inside of the vessel, while, with the mallet in his right hand, the workman beats the outer surface over the spot where the pestle is held. The pestle is also used for beating out the flat bottoms of such vessels as have their parts fashioned separately."

Frequently the necks of urns as well as the handles and bottoms, are fastened

on afterwards by *slip* (or semi-liquid clay); a ring or ridge of clay is also put over the place where the neck joins the body, and serves to ornament as well as strengthen it. An additional coating of well-beaten clay is often put over the thin bottoms for the same purpose.

Large pans for indigo dyers, 4 feet high and 3 feet broad, are always handmade, even in places where the wheel is well known. They take from two to three days to make, and are used also by sugar manufacturers and tanners. The hammering out of the lower edge of a bottomless cylinder to form a new bottom is, of course, a tedious process, and an ordinary potter is not able to complete more than eight or nine of these *chattics*, as they are called, in a day.

Again, touching the tools used for pottery, both prehistoric and modern, we come to an interesting point. General Thurston, whilst exploring certain mounds in the Mississippi Valley, found some curious mushroom-shaped articles, of burnt clay, which he took to be modelling tools for plastering or smoothing the walls of houses, and almost (if not altogether) similar shaped tools have been found in numbers, embedded in the red hill mounds of Essex, especially at Goldhanger, but of exceedingly coarse and crumbling material.

I have noted a few myself, at Rochester Museum and elsewhere. Good plates of these baked clay articles can be seen in the 20th Annual Report of the *Bureau of American Ethnology* (viz., plates XXXIV, XXXV and XXXVI), and Professor W. H. Holmes, describing them on p. 35, says, "The form (mushroom shape) is exactly suited to use in supporting the wall of a semi-plastic vase from within, while the manipulation of the outer surface is going on with paddles or other modelling or decorating tools."

Dr. Joseph Jones thinks they may have been used for pounders or pulverisers in place of mullers or pestles of wood and stone.

I thought that these curious tools might be kiln rests for supporting small individual pots, placed mouth downwards upon them or as supports to "bats" for holding ware in the kilns, and indeed some may have served this purpose; but, after a visit to the potteries, in Poole and its neighbourhood, the potters there came to the conclusion that some were either "pressers" used by hand, to beat out cakes of clay from balls of the same, in order to form plates and bottoms of vessels; or else meant to be used, as Professor Holmes suggests, and as at present employed in India.

Having shown several of the so-called (for want of a better name) pedestals and T-pieces to a well-known potter, *i.e.*, Mr. C. H. F. Collard, of the "Dorset Art Potteries," he maintained that the mushroom-shaped and T-shaped tools are hand stamps or pressers used to flatten out bands of plastic clay. One tool, which he called a presser, and demonstrated the use of, was, in design, exactly like one of the Tennessee forms, but made of wood, not earthenware.

Mr. W. C. Mills, Curator at the State Museum, at Columbus, in a letter to me of July 2nd, 1909, observes thus: "I have never met with objects of this character in Ohio, although all the mound-building Indians made pottery in abundance," and

Mr. Holmes, writing from Washington, about the same date, to me, remarks: "These suggestions, regarding the possible use, are interesting and must be taken into account in future discussions of the subject. . . . Some of the specimens in our collection would have served well as pressers." He promised to make further researches for me into the matter of their discovery in the mounds of Tennessee, and report.

We now come to the question of "firing" the specimens of pottery, after they were duly sun dried and ornamented by having geometrical figures inscribed on them or patterns scored or carved by a pointed stick. The rudest pottery frequently shows this primitive sort of ornamentation, including knobs, bosses and semi-circular holes: carved lines, crossed lines and circles, often grotesque outlines of animals, and bead designs made by pressing berries, shells and pebbles into the soft material.

The ancient kilns, as far as I can ascertain, were very small structures of mud and wattles, usually from 4 to 5 feet in diameter, but some much smaller. There are cases where kilns or ovens were made small enough to hold only from one to three pots, and built from the level of the ground, in some cases a couple of feet down from the surface, being more like small covered pits than anything else.

The nearest approach to the prehistoric kilns is to be found now in West Africa where Mr. F. W. Reader thus describes the iron-smelting furnaces of Angola. (*Journal of the African Soc.*, vol. ii, pp. 44-49, 1902): "The smelting places are just outside the village. The men cut the wood and make the charcoal. The women join them, after cultivation is over, when the entire population collects the ore . . . The kiln is a long narrow erection made of pieces of ant hills, lined with a wall layer of mixed charcoal and plastered over with mud."

Personally I find it easy to conceive a similar condition of things in our own country in the pre-Roman times or even later. The Red Hills Report curiously enough has shown that a large quantity of charcoal is mixed with the red burnt earth there, Mr. A. H. Lyell proving that, at Goldhanger alone, no less than eleven different kinds of wood produced the *débris*, including willow, furze, broom, hawthorn, hazel, and elder.

He says, "The pieces of charcoal vary from 1 inch to $\frac{1}{2}$ an inch in diameter or less. . . . Might not this mean that the plants grew in a low copse? The more or less size of the pieces of charcoal may thus be accounted for and, possibly, also the presence of the other small sticks of rather a greater variety." There is also the other question—as to what possible purpose such a gathering together of all these woods could have served? "But I can," he continues, "throw no light on this point."

What was to prevent the primitive inhabitants of Goldhanger, or any tribe that might make periodic visits to these most suitable places for marsh kilns (as the Indians do when they migrate for the purpose), from using this brushwood to make, with the marsh clay, numerous small mud and wattle kilns and saggars, in some, at present, unknown industry; and, on the breaking up of such kilns (as

they would be constrained to do on each occasion of firing) throwing the material in its half-burnt condition aside in a heap? This would, perhaps, account for the large quantity of red burnt earth now found in some red hills, where the mixture of charcoal is still evident, but which having lost its plasticity through the semi-burning, was useless for the purpose the second time.

That the largest of these mounds would be used, in after years, for secondary purposes, either as cattle refuges, or mounds to erect dwellings upon, as in America, does not need a great stretch of imagination. I have seen pieces of luting from the red hills, which plainly show the marks of wattles, and prove that some kind of structure, be it sagger, oven, or kiln, was built of wood upon such a framework; but there are two if not more objections to this theory of the red hills formation, viz., how could such kilns, even if numerous, produce these vast mounds of red earth? and why do we not find great quantities of spoilt pottery around if the kilns were for pottery making? No satisfactory answer can be yet given to these questions. But turning for a moment to these primitive marsh structures that I have imagined, Mr. Collard informs me that the quantity of earth used for each would be greater than appears at first sight. The ancient kilns probably had no side flues, but many of them had a raised perforated bottom. Instead of coal they used wood, furze, fern, straw, and waste of all kinds. They doubtless cut two gutters or square trenches in the ground, and burnt the sides of the trenches hard. Over these they would pack their wares, tightly together, and then build their kiln around the lot, with semi-liquid clay and sand (a dome-shaped structure), with an exit for smoke at the top. A fresh one would require to be built each time of "firing," and the old material cast aside.

In less remote times bricks came into use, and so kilns could be erected before the articles were packed, a distinct advantage. They could also be made much larger, and so burn a larger quantity of vessels at a time, besides having the advantage of permanency.

We are apt to conclude that all kilns must be of brick, and have flues, and to assume those so ably described in detail by Mr. Artis in 1844, must be exactly the same as those used in pre-Roman times. The one discovered by Mr. Artis at Castor (and which is figured on p. 267 of Mr. Wright's book on *The Celt, the Roman, and the Saxon*) was of brick, like the kiln, at Sibson, near Wansford, and concerning the latter he writes, "The oval pedestals which supported the floors of the kiln were still apparent."

Furthermore, he declares that he traced these potteries for twenty miles, and considers that "at the Durobrivian potteries not less than 2,000 men were employed."

On the Halstow and Upchurch marshes another large manufactory must have been established, and the larger brick kilns used as at Sawankalok district, Siam (see "Notes on Ancient Pottery Kilns at Sawankalok, Siam," by T. H. Lyle, *Journal of the Anthr. Inst.*, 1903, p. 238), but in these cases it is probable that the Romans only settled on a pre-existing pottery site, using better kilns and more modern methods than those who worked there before.

Even then the kilns were comparatively small. For instance, in a letter to me by Mr. George Payne, F.S.A., dated 26th May, 1909, he says, "Along the western side of Milford Hope many patches of burnt earth were detected upon the mud flats which undoubtedly formed the bases of kilns. Mr. Cumberland Woodruff, some two or three years before, found, at the base of the Stray way mound, what appeared to be the remains of the wall of a circular kiln."

"The section which I saw, *in situ*, showed that the interior was about 3 feet in diameter. The broken down wall was a foot high and 6 inches thick, being composed of a hard coarse concrete." (See also *Archæol. Cant.*, xxii, pp. 52-53.)

On further conversation with Mr. Payne, at Rochester Museum, he informed me that many of these circular patches of burnt earth at Upchurch were very near the water, and consequently any structures erected thereon were liable to be washed away by the tides. He saw another (4 feet or more under the present surface) about 5 feet in diameter, the wall being a foot thick, but, he remarked, "I never saw any evidence of flues or of brick or tiled kilns." The fact is, as we saw before, pottery can be turned out beautifully symmetrical, ornamented, glazed, and burnt, without either wheel, lathe, or kiln.

D. Randall MacIver (in an article, viz., "Manufactory of Pottery in Upper Egypt," *Journal of the Anthr. Inst.*, 1905) gives an account of pot making on the banks of the Nile, where the natives pile the pots to be fired within a simple ring of stones, "about 3 feet in diameter," heap fuel over them, set fire to the fuel, and allow the mass to burn itself out. The Edfu kilns are somewhat better, being four-sided with a false bottom of perforated brick or bars. The Andamanese, according to Mason (*Origin of Inventions*, p. 167), after drying the hardware vessels in the sun, bake them thoroughly "by placing burning pieces of wood both inside and around the vessel."

Amongst the Nicobar people no ground floor is prepared at all, but "near the hut a few broken bits of pottery are stuck in the ground a few inches apart, and in such a manner as to form a rough stand for the pot, which is placed, bottom upwards with the rim resting on the potsherds, and some 4 or 5 inches off the ground. In the same space immediately under the pot, a layer of firewood ash, and a quantity of cocoanut shells and seraps of firewood are heaped up, and then a peculiar wheel-like object called a *huvvat*, of larger circumference than the pot, is laid on its upturned base. Against this are rested branches and firewood, which are to be lighted outside the vessel, but must not be allowed to come into contact with it.

The length of these billets is regulated somewhat by the size of the utensil in course of firing. When all the arrangements have been completed the fuel under and around the pot is kindled, and the flame fanned if necessary by two or three women, who, armed with sticks about 5 feet long in both hands, act as stokers, propping up and replacing the burning logs until the vessel is supposed to be sufficiently baked (E. H. Man in *Journal of Anthr. Inst.*, vol. xxiii, 1894, "Nicobar Pottery"). Here we have a mode of firing similar, probably, to that

used by our British ancestors, before even the mud and wattle kiln was thought of, much less one made with bricks and with flues.

The Nieobar structure, too, must be very small, for mention is only made of burning one large pot at a time. Major F. J. W. Porter, R.A.M.C., when stationed at Sierra Leone, in 1909, writes to me in similar terms of the manufacture there. He says, "After they shape the pots by the coil method, and dry them in the sun they are placed on a frame above a smoky fire, and slowly baked by the fumes of the charcoal. The place of manufacture is usually near the banks of a lake or river. During the baking they use no kiln either of mud or of brick."

There the pots, while hot, are smeared with a vegetable juice to colour them, but are not decorated. The vessels are coarse and poor, and no tool is used save a paddle to beat the strands of the coil together into one piece, the whole being usually polished with a stick or stone.

One could scarcely conceive of a ruder process, except perhaps that of the Asāba tribe, mentioned by J. Parkinson in his notes on the "Asāba People of the Niger" (art. in *Man*, 1906, p. 321), viz., "Firing is accomplished by placing sticks inside, round and above the pots. They are not burnt in holes in the ground. I have nowhere seen signs of pigment, glaze or varnish." Two friends of mine, Lieut. Edward H. Fosbery and Mr. D. Barry, C.E., bear similar testimony concerning the rude firing of the vessels in Northern India, where they had every opportunity of seeing the natives at work, and of gaining information. They both declare that the natives burn the ware in the open, by heaping bushwood and animal dung over it, having no permanent erection, either below or above ground, and leaving no burnt "working floor."

These good people of India trouble not themselves about hydrated silicate of alumina, felspar, lead, cobalt, potash, calcined bones or the highly complicated glazes, enamels and colourings of modern porcelain manufacture; sufficient for them that they follow in the footsteps of their forefathers. They are, to-day, in a state far more primitive than that of Homer's time, for even at as early a date as 1500 B.C., we find traces of artistic ware necessitating complicated tools and rare enamels for its production.

The next, after the open surface kiln (which is hardly worthy of the name), is that devised by the formation of a hole in the ground, over which the burning materials are placed. Thus Dr. Frank Russell, in his article on the Pina Indians (*Bur. of Amer. Ethnol.* for 1904), tell us that the potters of this tribe dig a shallow pit in the ground, and burn a charcoal fire in it for some time before packing the pottery in. This might almost be called the "underground kiln," the hole being either square or round. Dr. W. J. McGee, in writing of "Seriland and the Seri Indians" (*Bur. of Amer. Ethnol.*, 1895), mentions them as using "a little outdoor fire in a shallow pit adapted to a single vessel."

The Cherokees, it is well known, invert the sun-dried vessel over a hole in the ground, which they previously fill with burning corn cobs and resinous bark. These are put inside as well as outside the article to be fired. The Berbers of

Algeria, according to Anthony Wilkin (*Among the Berbers*), use no real kilns either.

Mr. W. May, in his article on the Malayan Pottery of Perak (*Journal of Anthro. Inst.* for 1903), asserts that he saw a kiln at Saiong which was simply a square hole dug in the ground $3\frac{1}{2}$ feet by 18 inches deep, lined with pieces of wood which were afterwards set on fire. The particular one referred to held from thirty to forty jars at a time. This "underground kiln" is an improvement on some of the others, and Mr. Wray points out that these people by a judicious mixture of sand with the clay (and probably other substances) have succeeded in reducing the probable breakages to three or four per hundred.

It is curious to note that not merely was Samian ware, when broken, mended with rivets of lead and bronze (see p. 273 of *The Celt, the Roman, and the Saxon*), but Mr. F. W. Reader, in the *Report of the Red Hills*, mentioned finding, at Landgenhoe, "under a depth of 3 feet, a piece of black ware having two rivet holes, and again at a depth of 4 feet a piece of crude ware ornamented with the finger nail and having two rivet holes" (Report, p. 41), besides I know not how many other fragments. We must pass on now to a superior type of kiln, *i.e.*, the "double chamber" kiln, more like that found by Mr. Artis, of which we possess far more evidence than is usually supposed. Besides the model in the British Museum, and the plates at the Rochester Museum, we have this better class of ancient kiln referred to by Andrews in his article on "Ancient Pottery Remains in Warwickshire," where he says that the Roman flues were constructed in the ground, and powdered flint was mixed with the clay. Mr. W. Page, in his article on "Romano-British Pottery found at Radlett, Herts" (*Soc. of Ant.*, vol. 17, p. 270), refers to a small kiln for the baking of Mortaria, in which both Mr. St. John Hope and himself noticed that the urns were placed or packed five deep one over the other, Indian fashion.

Mr. E. Kiernander in a letter referred to before, describes the kilns for common wares in the North-West Provinces of India, as round pits about 3 feet deep and 8 feet in diameter, at the bottom of which is a layer of charcoal ashes, but the kiln for fine wares was of a better type, being a cylinder of clay or brick, 5 feet high and divided into two compartments, one above the other, by a perforated flooring of clay, with a door for each compartment, the upper floor holding the pots, the lower the fire. This kiln is roofed in with earthen platters, tiles or old potsherds, plastered outside. This type being more lasting than the earlier mud ovens, is met with most frequently in the British Isles.

Mr. R. A. Wilde found some in Nottingham, buried from 10 to 12 feet under the surface (*Ancient Nottingham Pottery*); Mr. G. L. Gower, F.S.A., found another on Limpsfield Common, Surrey, only 2 feet below the surface (*Proc. of Soc. of Ant.* for 1869, p. 359), somewhat oval in shape, and likewise about 3 feet in diameter. At Ridlands Farm, Limpsfield, he succeeded in unearthing yet another, somewhat oval, too, and larger, being 7 feet 2 inches by 5 feet 10 inches, indicating a "smother" kiln for black pottery.

Again, during the course of his explorations in Sussex, Mr. E. H. Willett, F.S.A., discovered a small kiln, 4 feet under the surface, composed of bricks cemented together, and entirely filled with charcoal. Also, not far off, another and larger one, 4 feet wide by $5\frac{1}{2}$ feet deep. In this latter he, like Mr. Reader, found fragments of pottery "some mended by leaden rivets," showing, I maintain, the care taken of the finished urns in those days (see *Proc. Soc. Ant.* for 1877). Nor is this all. Mr. C. H. Read, in 1895, found a kiln at Shoebury, Essex, in which, about 18 inches from the floor, was a perforated diaphragm of clay 3 feet in diameter, and 2 to 3 inches thick; all the operations for firing were underground, only the crown being visible from the surface.

The furnaces were simple tunnels through the brick earth, the ware was packed from the top. Three stood once in a line, all being of the same construction. Mr. Read is certainly right in concluding that the ordinary Roman kilns are much more elaborate than these antique ones. He likewise mentions a very curious arrangement of four small kilns of a cruciform shape "built around one fire and opening towards it." The fact of so many being found in a line and grouped together, is what I would naturally expect from the conservative habits of the aboriginal inhabitants, who, sooner than build one large kiln, preferred to multiply these small ones. They point to very early times, when the pottery industry was not confined to one or two big manufacturers in a locality; but when many of the people made their own ceramic ware at a common quarry, creek or marsh, going there periodically in the season.

Professor Windle, M.D., found one, with a circular platform about 4 feet in diameter, at Manchester (see *Proc. Soc. Ant.* for 1897, p. 405), and Mr. W. Page, F.S.A., discovered yet another, of the circular pattern, 3 feet in diameter, containing projections from the interior walls to support the floor. A similar one existed, not 10 feet from the first, and there may have been others. (*Proc. Soc. Ant.* for 1898.)

Thus, we gradually come to a time when Roman civilisation had its influence on the Britons, and although the Romans caused the Britons under their immediate supervision to improve their methods of manufacture in the Roman colonies, yet, after this influence was withdrawn, and even during the period of the Roman occupation, no doubt the most antiquated modes of manufacture were pursued in obscure districts of these islands.

Mr. Walters, of the Greek and Roman Department, British Museum (in his second vol. of *History of Roman Pottery*, p. 433), very truly describes the improvement in kilns after brick came into constant use, viz., "The Romans used a great variety of clays. There is a model of a furnace (on p. 444). . . Kilns were of various forms. In some cases the flues were made of loam, which had been converted into brick by the action of fires; some were 5 feet each way. The kilns consisted partly of burnt and partly of unburnt brick, the interior floor and outside of the roofs being covered with a strong layer of cement. Charcoal fuel of pine was used. The oven, where the pots were placed, has been destroyed in most

cases, but we know that it consisted of a wall with entrances and a vaulted dome. The pots were ranged partly on the floor and partly on terra-cotta stands over the holes. Stands of baked clay in the shape of flattened cylinders supported the pots in the oven, and these rested on pads of a peculiar form roughly modelled" (see *Brongiat*, vol. i, p. 429).

The use of stands, either solid or tubular, indicates a certain advance on the most primitive methods of firing, and several of these clay stands may be seen in the museums. Many hundreds have been unearthed in the Sawankalok potteries, Siam. In Poole, Dorset, I found them in constant use and of all sizes, from 3 inches to 10 or 12 inches high, and from 2 to 3 inches in diameter, with holes through the centre. There they are chiefly used to support the bats or slabs which hold the urns, but could be used for single urns if needed.

We must now pass directly to the primitive methods of glazing, as it is not the purpose of this paper to go into details of the modern enormous and complicated kilns, where from one to three thousand vessels are fired or glazed together. Many of the American tribes, where clay is not naturally of a reddish tinge, colour the pottery with ochre. In Peru they use a black oxide for a dark colour, introduced into the clay ("Peruvian Pottery," by Dr. Barnard Davis, vol. iii, *Journal of the Anthr. Inst.*). In Nicaragua, Australia and New Zealand they smear the ware over with *kanu* and other gums and resins, thus producing a varnish. Other vegetable decoctions are made from mangrove bark applied in a liquid form, while the ware is hot.

Mason describes how the natives of California make their vegetable dyes. For instance, their black is made from a mixture of yellow ochre and an equal quantity of pinion gum, both mixed again with sumac (*Origin of Inventions*, p. 255). Deep yellow and lemon is produced by boiling the tops of the *bigelovia graveolens* with native alum.

Then we have purple from the bodies of shell fish, blue from indigo, red from cochineal, gamboge, shellac tint and various other colours from mixtures of alum, soot, nitre, native ink, acids and the juices of plants. Some of the American mound clays contained more than 60 per cent. of ferric oxide, the remainder being silica and alumina, hence a careful mixture of kaolin or white clay with the red oxide would give exquisite shades of cream and pink such as we find sometimes in native ware.

Frequently the ashes of certain seeds are mixed into a sort of paste and applied to the vessels with brushes of hair fibre or feathers. Clays of varying hues are likewise ground and prepared in a liquid state for application. I have seen the Somali potters at work painting with these coloured clays in the exhibitions. A few tribes discovered that pulverised flint mixed with other substances made an admirable glaze, and at present many tons of flints are sent to the English pottery districts to be ground up for the same purpose. From Grays district, where I reside, only the purest nodules or flints are used, the "rusty" ones being discarded.

The glazes of the old Egyptian ware consisted mostly of pulverised stones of

various hues. Thus the blue glaze came from sand, alkali from the Natron desert and lime, the colouring matter being an oxide or carbonate of copper.

The ornaments on primitive pottery, consisting usually of crossed lines and geometrical figures, were easily formed before the glazing by the single, double, or multiple roulette—in other words, by small notched wheels after the pattern of a horseman's spur, only made of wood. Several of these fixed on the one axle and passed up and down over the surface of a partially dry vessel produced very pretty and truly symmetrical patterns. These notched roulettes seem to have been well known in the Mississippi Valley. Professor W. H. Holmes says the compound roulettes were quite common (*Pottery of New England*, p. 179), and we must conclude that many of the crossed line patterns on the celebrated black Upchurch ware and Anglo-Saxon pottery were made by similar tools. Wright, although not knowing anything of the wooden roulette, says of the Upchurch ware, "Some pots are ornamented with bands of half circles made with compasses, and from these half circles lines are, in many cases, drawn to the bottoms of the vessels with some instrument like a notched piece of wood. Some are ornamented with many intersections and zigzag lines, while on others the ornament is formed by raised points encircling the vessel in bands or grouped into circles, squares, and diamond patterns."

Dr. H. Laver, of Colchester, who is quite an enthusiast and authority on the subject of Late Celtic and Roman pottery, and whose museum is full of beautiful specimens, says that "none of the Roman pottery, if we except that known as Samian, approach the Late Celtic in careful finish, modelling, or hardness of paste" (*Essex Archæol. Trans.*, vol. vi, New Series, p. 222), so we may feel quite sure of the handiwork of our ancestors, even if they had rude kilns and rough appliances for ceramic manufacture.

Now, it is noticed that a great deal of the British early pottery is quite black, not merely on the surface, but throughout the texture, and in most cases the black has a smooth polish very like as if a coating of black-lead had been used and a polish brush afterwards applied. The "Amalgamated Cement Manufacturers" have several specimens in their private collection at Park House, Gravesend, dug up from the marshes of Swancombe and of Upchurch (during the process of procuring clay suitable for cement), and I found much on the Tilbury Marshes at low tide, besides which Professor Boyd Dawkins found Roman pottery on both the Mucking and Cliffe shores in 1864.

There is considerable dispute as to how this black polish or sheen is produced. Mr. Artis had noticed it as far back as 1840, and then attributed it to the use of what he called "smother kilns," i.e., kilns where the thick smoke, frequently, as we saw, made thicker by burning bark or dung, was driven back upon the vessels by covering them down and so preventing its escape.

But this explanation is only partially satisfactory, for smoke alone could not penetrate every particle of the mass, as we know really has taken place. Is there any more satisfactory explanation? Professor Flinders Petrie says, "The black

portion is due to the de-oxidising action of wood ashes in the kiln reducing the red peroxide to the black magnetic oxide of iron. The brilliant lustre of black is probably due to the solvent action of carbonyl due to imperfect combustion." This explanation is nearer the mark, for it recognises a chemical action in the formation of the black colour, but, having laid the facts before Mr. W. Laurence Gadd (chief expert for the "Amalgamated Cement Manufacturers"), at Gravesend, he explained the phenomenon thus (in a letter to me dated June 4th, 1909): "Iron generally exists in clays and similar substances either as black protoxide or red peroxide. In blue clay, such as is found in the marshes, the iron is in the form of protoxide, but if exposed to air for some time it takes up oxygen and is converted into peroxide, hence the exposed clay becomes brownish red. If such blue marsh clay be baked in presence of air or oxygen the protoxide of iron is all converted into peroxide, and the baked clay becomes bright red, exactly as you see it in red bricks.

"The blue Roman pottery was probably baked in a closed kiln with wood fuel, and the absence of air in contact with the clay accounts for the pottery remaining blue or black, as peroxide of iron (red) cannot be formed except in presence of air—from which oxygen is obtained. The 'smothering' of the kiln, therefore, would produce a black pottery, not because the smoke discoloured it, but because 'smothering' prevented access of air. The lustre on the surface is due, I should say, to a thin, naturally formed layer of protoxide on the surface."

Messrs. Buckman and Newmarsh (in *Remains of Roman Art*, pp. 77-84) support this contention fully, viz., "We can see how the diffusion of a carboniferous vapour prevents chemical change (*i.e.*, the conversion of the protoxide to the peroxide), and more especially in the smoke of burning matter (as wood or coal), as these would give off hydrogen and carbon on high temperatures, and are capable of reducing the peroxide of iron to oxide, or rather, preventing the additional oxidation, so that this dark colour of the pottery was due to the chemical action of the means employed, and not, as Mr. Artis seems to conclude, to a colouring exhalation merely permeating the articles fired in the smother kilns with its black smoke." You can see a large quantity of this black pottery, of varying thickness and pattern, upon the table, all of which I had the good fortune to pick up in ten minutes on a portion of Tilbury Marsh opposite West Tilbury Church, where a local manufactory may once have been in operation. These pieces I found on the mud surface lapped by the tide, and although I did not personally discover any marsh kiln bases, yet Mr. Dobree and his brother inform me for a certainty that sometimes at low tide about 25 feet out, into the bed of the Thames, they have seen circular marks about 3 feet in diameter which might well be kiln bases, and have picked up large pieces of what appeared to be burnt earth, or part of a "working floor." I intend to take a further opportunity of exploring on this site in the near future, as I understand that portions of the thick parts of burnt wattles appear, likewise set in semicircles, and projecting from the surface of the mud. Mr. G. Payne, in a further communication, reports that the late Mr. Elliott found a

kiln with seven or eight pots in it on the Upchurch Marshes in 1883. Mr. Elliott, furthermore, found no less than three kilns near Higham, with four or five pots about the same year. The point to be observed is that all these were small kilns and not of permanent stability, hence we must not expect large structures on the marshes, and it may be that much of the evidence we seek is deep down in the mud.

Finally, I may say that I owe a deep debt of gratitude to Mr. A. H. Dunning (lecturer on New Guinea pottery), Professor C. C. Willoughby, Professor W. H. Holmes, Professor E. Orton, Professor Clarence B. Moore, Dr. A. C. Haddon, Mr. W. C. Mills, Dr. Walter Hough, and other American friends, for the beautiful specimens of American native pottery sent over for the lecture, and also for the numerous letters explaining the conditions of the prehistoric ceramic art in the Mississippi Valley and in Ohio.

APPENDIX.

In "Excavations at the Roman City at Silchester," 1909, by Messrs. W. H. St. John Hope and Mill Stephenson (*Archæologia*, Vol. LXII, p. 328), the Authors refer to a discovery of several mud kilns such as I have assumed were formerly used, although none have been as yet found on Tilbury Marshes.

The most recent contributions to the above subject may be found in the article on Red Hills by Mr. C. Hanson, F.S.A. (*Antiquary* for April, 1911) and one by Messrs. F. W. Reader and Horace Wilner, F.S.A., on "The Essex Red Hills" (*Antiquary* for July, 1911).

NOTES ON THE HEIGHT AND WEIGHT OF THE HOKLO PEOPLE OF THE KWANGTUNG PROVINCE, SOUTH CHINA.

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THE Hoklo people are a race inhabiting the south-east coast of China. They are estimated to number about 12,000,000, but of these only 3,000,000 belong to Kwangtung: they are found in the north-east part of that province.

Careful study of their language has led some sinologues to believe that they are one of the most ancient Chinese families, certainly older than the much more numerous "mandarin"-speaking peoples who inhabit Central and Northern China. Be that as it may, in most of their essential characteristics they differ but little from the "typical" Chinaman—capable, industrious, resourceful and thrifty; whether as farmers or fishermen, merchants or scholars, they generally succeed in life.

In addition to their title of "Hoklos" they are also called "Swatow" men (from the treaty-port of that name, from which several thousands emigrate yearly), or else "Tie-chiu" men—Tie-chiu being the prefecture within which Swatow is situated. Large numbers of them may be met with in Singapore and in the Dutch and French Indies, but it would be out of place to write at length on this subject here. The examinations from which these statistics are derived were undertaken at a hospital of the English Presbyterian Mission, situated in a fishing town some hundred miles south of Swatow.

In spite of the increase of modern learning and the rise of "Young China," it is impossible to get a large number of volunteers to be weighed and measured: they are prevented by a vague fear of what they do not understand, by an ill-defined dread of the unknown motive that prompts the investigation. Of the cases examined, two hundred and fifty were "quite healthy" and consisted of hospital students, employés, patients' relatives and hospital visitors, but the large majority of those dealt with came to the hospital for treatment, and must be regarded as "second-class" and "third-class" lives. Most of these, however, were not suffering from diseases that would directly affect their weight; they were not chronic invalids confined to bed and kept on light diet, but cases, for example, of asthma, or of chronic rheumatism, or patients suffering from diseases of the eye or the skin.

All the patients (along with the healthy people) were used to establish an average height.

After the cases of tuberculosis, diabetes, indulgence in the opium habit, and other conditions associated with emaciation had been deducted, the remaining

six hundred and seventy (hereafter called the "fairly healthy") were used, along with the healthy, to determine a standard weight. The justifiability of this step will be considered in a later paragraph.

All the cases quoted were males over seventeen years of age.

Throughout this report reference is occasionally made to the average height or weight of a group of individuals; in most cases, however, one has preferred to prepare a diagram showing at a glance, not merely the mode—the condition most frequently met—but also to what degree and in what numbers variations from this mode were found. To facilitate comparison of one set of figures with another, the diagrams have in each case been made to show percentages.

The Height of the Individuals Examined.

The facts here are simple and may be stated briefly:—

Influence of health.—No difference was found between the average height of "healthy" people and that of hospital patients.

Influence of age.—A comparison was made between groups of younger individuals and those who were older, and it was found that there was no appreciable difference between the height of those aged 18 to 30 and of those over 30 years of age.

The influence of health and age upon height having thus been shown to be negligible, there seems to be no objection to grouping all the cases (from 18

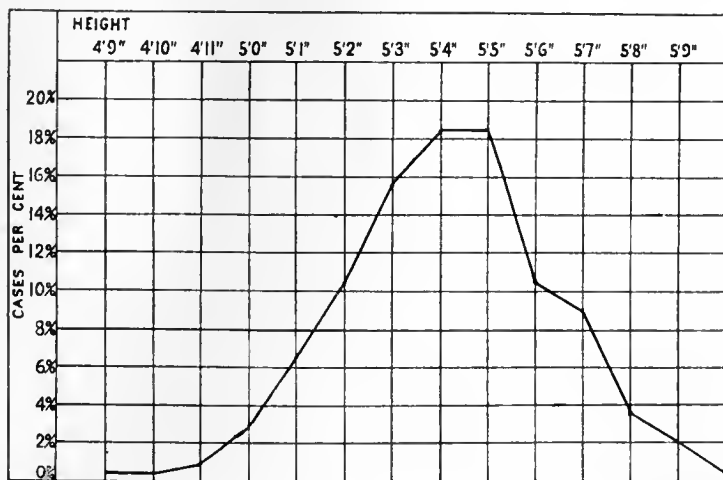


FIG. 1.—DIAGRAM SHOWING THE HEIGHTS MOST COMMONLY MET WITH AMONGST 1,021 INDIVIDUALS OVER 17 YEARS OF AGE.

years of age upwards) into one table; and the diagram (Fig. 1) shows the relative frequency of occurrence of each height in the whole series of 1,021 cases examined.

It will be noted that the height of more than half the cases is from 5 feet 3 inches to 5 feet 5 inches, and that three-quarters of the cases occur between

5 feet 2 inches and 5 feet 6 inches. The average height is 5 feet 4·07 inches. This figure may be contrasted with Quetelet's¹ for adult male Europeans (5 feet 5 inches to 5 feet 6 inches), but is found to be the same as the figure given by Buchanan² as the result of his measurement of 28,000 Bengali prisoners.

The Weight of the Individuals Examined.

When we approach the question of weight, on the other hand, many complications meet us. In view of these complicating factors no useful end could be gained by stating the average weight of the thousand cases examined.

Influence of height.—The factor that most obviously and most markedly affects the weight of an individual is his height. *Ceteris paribus*, a tall man will be heavier than a short man. If one had had enough material—say several hundred cases at each height—one might have prepared a series of average weights (one average for each height), but with only one thousand cases altogether that course hardly seemed justifiable. One therefore had recourse to the expedient of stating a man's weight not as so many stones or pounds for his total height, but as so many ounces for each inch of his stature. Thus a man whose height was 5 feet 6 inches was found to weigh 9 stone 2 lbs.; that is 2,048 ounces—or 31 ounces for each of the 66 inches of his height. This figure—obtained by dividing the weight in ounces by the height in inches—I have called the weight for height index (W.H.I.).

The question of the influence of height upon weight was thus simplified, but a study of the cases examined elicited a further fact (which has been found to be true amongst other peoples), viz., that, generally speaking, a tall man is heavier

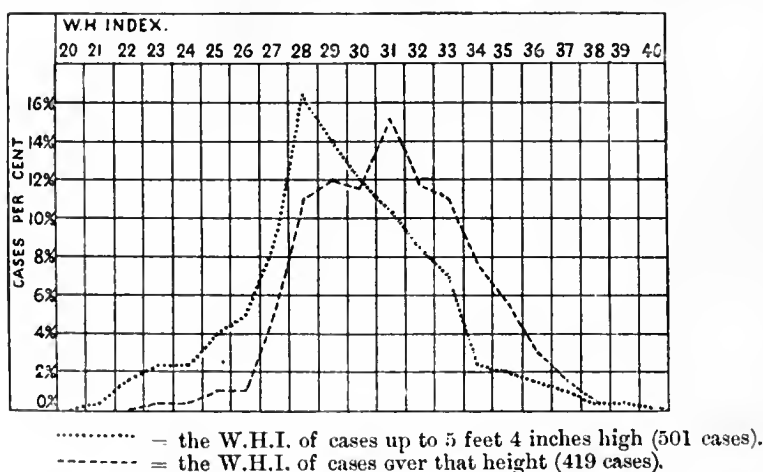


FIG. 2.—DIAGRAM SHOWING THE INFLUENCE OF HEIGHT UPON THE WEIGHT-HEIGHT INDEX. (i.e., weight in ounces divided by height in inches = W.H.I.)

Quetelet, *Anthropometrie*, 1870.

Buchanan, *Manual of Jail Hygiene*, 1901. (Quoted by McCay, *Standards of the Constituents of the Urine and Blood of Bengalis*, Calcutta, 1908.)

for his height than a short man. That is to say the W.H.I. for a tall man will be greater than that for a little man. The average W.H.I. of the 419 cases over 5 feet 4 inches was 31·3, while of the 501 below that height it was 29·7. A glance at the annexed diagram (Fig. 2) will show that these averages depend not upon the accidental occurrence of a few extraordinary cases in one or in both groups, but upon the fact that all the cases in the group of taller individuals are characterized by a higher W.H.I.

Influence of age.—A further factor that must be considered is the influence of age upon the W.H.I. This was tested by dividing all the cases into two groups as follows :—

Age 18 to 34	...	...	...	W.H.I. averaged 29·5.
Age 35 or over	...	...	...	W.H.I. averaged 30·6.

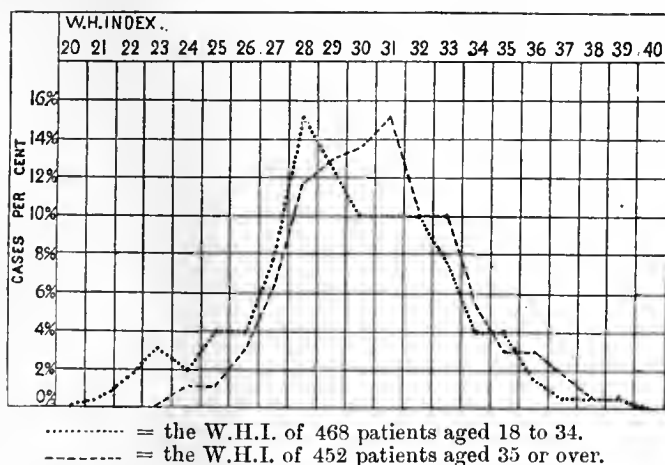


FIG. 3.—DIAGRAM SHOWING THE INFLUENCE OF AGE UPON THE WEIGHT-HEIGHT INDEX.

The annexed diagram (Fig. 3) bears out the facts shown by the average, viz., that an older man is heavier than a younger man; but as a matter of fact the influence of age is not very considerable. If one calculates by the two average figures given the respective weights of a young and of an old man of average height, the weights only differ by about four pounds.

A further diagram (Fig. 4) has been prepared, showing in one chart the influence both of age and of height upon weight.

Influence of health.—There is a third factor to be reckoned that one would expect to have a considerable influence upon this W.H.I., viz., the state of health of the individual. But it was found that the average indices of the 250 quite healthy people was only ·7 higher than that of the “fairly healthy”—equivalent to a difference of about 2½ lbs. in a man of average height. If, on the other hand, one considers the group of individuals suffering from diabetes, leprosy or tuberculosis, or addicted to opium, one finds a much more striking contrast; for the average value of an inch in the 101 such cases was only 27 ounces, i.e., 3½ ounces less than in the healthy.

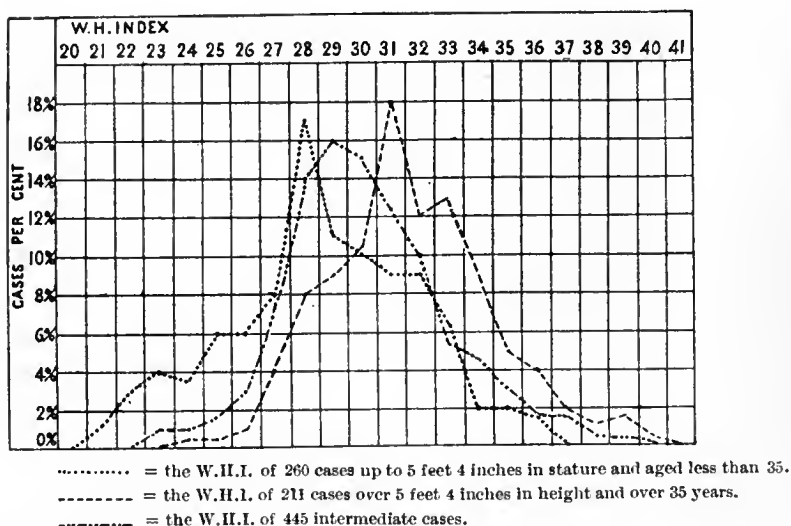


FIG. 4.—DIAGRAM SHOWING THE INFLUENCE OF AGE AND OF HEIGHT UPON THE WEIGHT-HEIGHT INDEX.

It may here be parenthetically noted that apart from the weight of his clothes, which in this tropical climate varies between $\frac{1}{2}$ per cent. and 5 per cent. of his body-weight, a man may be 3 per cent. heavier in winter than in summer.

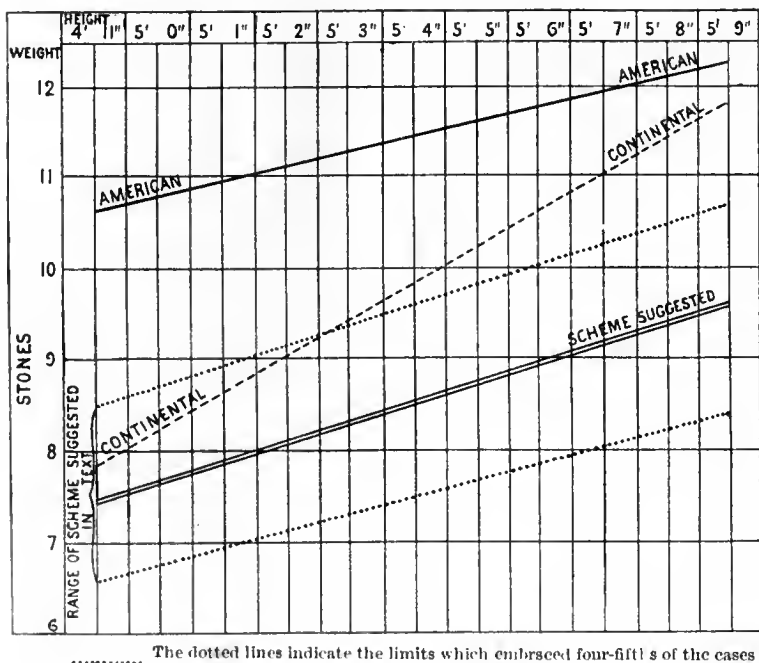


FIG. 5.—DIAGRAM SHOWING THE STANDARD WEIGHTS FOR EACH HEIGHT ACCORDING TO THREE OF THE SCHEMES REFERRED TO IN THE TEXT.

Methods for Preparing Standards.

In conclusion it will be well to look at some of the rules that have been suggested for estimating the weight of a man from his height. Three schemes seem to be pretty generally employed. First, there is a French rule¹ which states that for every centimetre of height over 100 one should reckon a kilogramme of weight; to put it into English one may say that for every inch over 40 of a man's height one should count 5 lbs. Some American authorities² advocate a second scheme whereby $2\frac{1}{2}$ lbs. is counted for every inch of height—a plan which gives a much greater weight for short people than the French scheme, though the results obtained by the two methods correspond more closely in taller people. A third, an English method,³ is to count 3 lbs. for every inch of height up to 5 feet 7 inches, and to count 7 lbs. for every inch above that height.

However excellent these plans may have proved in their countries of origin, no one of them will be found of any value in dealing with the Hoklos. The French scheme gives a fair approach to accuracy for the smaller people, but as one tests it for each increasing inch of height the figures approximate less and less to the actual facts of the case. The American scheme, on the other hand, begins too high (too heavy by three stone at 4 feet 11 inches) and remains so throughout; and the English scheme differs even more markedly than either of these from the requirements of the Hoklo people. One has therefore perforce to enunciate a rule of one's own, which may be stated as follows:—

Example.—Count 3 lbs. for every inch of height over 2 feet.

Height 5 feet (*i.e.*, 36 inches over 2 feet) $36 \times 3 = 108$ lbs. =
7 stone 10 lbs.

In explaining the American plan, the authors state that variations to the extent of 15 per cent. less or 20 per cent. more than the figure given may be met with in the perfectly healthy. If with the newly described scheme a difference of $12\frac{1}{2}$ per cent. in either direction is allowed for as compatible with health, one finds that 85 per cent. of the present cases conform to the rule.

Buchanan⁴ found that the average weight of his Bengali prisoners was 110–112 lbs. Taking his average height (5 feet 4 inches), this plan devised for the Hoklos would give 114 lbs.

According to a table submitted by Baron Takaki,⁵ the average weight of those Japanese under his supervision in the navy was 14,800 mommes, *i.e.*, 114 lbs. Bearing in mind that the Japanese are—according to European standards—an

See also Schall and Heissler, *Nahrungsmittel Tabella*, 1909.

² Quoted in *Edin. Medical Journal*, April, 1901.

³ Notter and Firth, *Theory and Practice of Hygiene*.

⁴ Buchanan, *Manual of Jail Hygiene*, 1901. (Quoted by McCay, *Standards of the Constituents of the Urine and Blood of Bengalis*, Calcutta, 1908.)

⁵ Baron Takaki, "Health of the Japanese Army and Navy," *Lancet*, May 19th, 1906.

undersized race, this suggests that the rule above enunciated may find application elsewhere than amongst the Hoklo peoples.

Summary.

The average height of the Hoklo people is considerably less than that of Europeans.

The average weight of the Hoklos, even when due allowance is made for their diminished stature, is much less than that of Europeans—so much less that the rules employed in western countries for estimating a man's weight from his height prove absolutely valueless.

A convenient rule has been found for estimating the weight of a healthy Hoklo from his height, viz. :—

To deduct two feet from his stature, reduce the result to inches, multiply this by three and call the result lbs.

Such scanty information as is available seems to show that (allowing for variations up to $12\frac{1}{2}$ per cent. above or below the figure thus obtained) this rule is capable of application over a much wider area than South China.

TABLE OF MEASUREMENTS OF HOKLOS.

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
42	3 10	8 7	56	4 10	7 7
29	4 0	6 0	45	4 11	„
26	4 6	4 12	75	„	6 13
19	4 $6\frac{1}{2}$	4 3	43	„	7 4
19	4 7	4 9	40	„	7 3
18	4 $7\frac{1}{2}$	5 $9\frac{1}{2}$	52	„	7 5
43	4 9	7 5	37	„	7 2
19	„	4 11	19	„	6 4
35	„	6 10	24	„	7 11
31	4 $9\frac{1}{2}$	6 8	43	4 $11\frac{1}{2}$	8 $6\frac{1}{2}$
61	4 10	9 8	68	„	7 11
18	„	6 12	42	„	8 5
18	„	6 0	61	„	7 8
40	„	6 13	32	„	7 0
49	„	8 6	45	5 0	10 4
57	„	9 9	50	„	7 12
18	„	6 2	24	„	5 7

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
66	5 0	6 8	30	5 0½	7 4
21	"	7 3	49	"	8 0
28	"	7 8	32	"	7 9
51	"	6 9	23	"	7 12
39	"	7 7	31	"	7 5
61	"	7 10	23	"	7 2
44	"	8 13	33	"	7 9
48	"	7 7	26	5 1	7 10
21	"	6 5	63	"	7 7
39	"	7 7	52	"	7 2
33	"	6 12	62	"	6 7
43	"	8 13	55	"	7 13
45	"	7 9½	28	"	8 8
28	"	7 12	24	"	8 5½
59	"	7 4½	29	"	8 0
28	"	7 12	39	"	6 10
31	"	8 6	28	"	6 0
36	"	7 4	60	"	7 6
29	5 0½	7 7	38	"	8 3
53	"	7 9	19	"	7 3
40	"	8 7	51	"	8 5
24	"	6 13	41	"	7 11½
19	"	7 2	43	"	7 11
18	"	6 8	69	"	8 3
64	"	7 0	58	"	6 2
41	"	5 10	37	"	8 2½
36	"	6 10	43	"	7 11
59	"	8 0	51	"	7 11
49	"	9 4	33	"	8 5
48	"	6 5	53	"	7 11
47	"	7 2	35	"	8 0
38	"	8 12½	40	"	"
57	"	9 6	25	"	7 8

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
32	5 1	7 8	48	5 1½	7 3
70	"	8 0	40	"	6 1
31	"	7 11	29	"	7 1
40	"	8 2	30	"	7 3
41	"	7 9	60	"	7 5
64	"	7 7	24	"	8 13
47	"	7 9	33	"	8 11
25	"	9 13	30	"	7 3
49	"	7 8	31	"	8 12
24	"	7 5	60	"	7 8
25	"	8 8	36	"	8 0
55	"	7 12	18	"	7 9
53	"	9 3	57	"	8 11
25	"	8 11	40	5 2	5 7
25	"	"	33	"	7 13
27	5 1½	8 5	43	"	7 3
52	"	7 7	19	"	8 10
39	"	7 12	47	"	7 2
51	"	6 9	43	"	"
56	"	8 8	42	"	8 2
22	"	8 0	22	"	6 4
44	"	7 12	20	"	6 12
41	"	7 3	22	"	7 10
33	"	7 13	30	"	8 12
23	"	8 2	47	"	7 2
25	"	7 10	64	"	7 7
30	"	"	25	"	6 1
24	"	7 8	46	"	7 6½
30	"	8 9	23	"	8 7
19	"	7 7	50	"	9 2
21	"	7 0	23	"	5 7½
22	"	6 8	37	"	7 6
22	"	5 3	47	"	9 4

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
26	5 2	8 2	28	5 2	7 10
30	"	8 0	47	"	7 11
37	"	8 4	42	"	9 2
20	"	7 4	24	"	9 6
26	"	8 3	22	"	7 8
51	"	"	50	"	"
34	"	9 10	63	"	8 13
25	"	6 0	29	"	7 11
20	"	9 1	47	"	8 10 $\frac{1}{2}$
31	"	7 6	38	"	9 1
49	"	8 8	28	"	7 10
44	"	7 0	19	"	6 7
20	"	8 1	27	"	8 0
53	"	9 7	64	"	8 3
20	"	6 13	22	"	8 10
51	"	8 7	40	"	8 4
32	"	8 11	54	"	8 7
23	"	"	28	"	9 0
29	"	8 1	18	"	7 11
43	"	8 0	49	"	6 7
40	"	9 11	23	5 2 $\frac{1}{2}$	8 2
60	"	7 9	18	"	6 11
20	"	7 8 $\frac{1}{2}$	53	"	8 2
45	"	7 11	32	"	7 9
36	"	9 10	45	"	8 7
20	"	7 7	45	"	7 4
37	"	9 1	40	"	6 12
24	"	8 9	43	"	7 12
48	"	8 4	28	"	6 10
18	"	6 8	32	"	7 11
64	"	9 0	33	"	6 8
58	"	8 4	27	"	7 13
42	"	9 0	23	"	6 7

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
36	5 2 $\frac{1}{2}$	7 9	36	5 2 $\frac{1}{2}$	10 13
23	"	6 5	61	"	7 12
29	"	7 3	67	"	7 5
39	"	9 0	19	"	7 6
63	"	9 1	30	"	7 10
40	"	7 4 $\frac{1}{2}$	49	"	8 5
49	"	8 5	39	"	6 13
34	"	7 11	33	"	10 0
34	"	8 8	63	"	7 11
26	"	7 13	42	"	9 4
52	"	8 10	45	5 3	8 11
27	"	7 5 $\frac{1}{2}$	55	"	7 7
20	"	7 10	43	"	8 7
22	"	8 0	31	"	8 0
20	"	8 7	38	"	6 13
26	"	8 12	28	"	7 11
20	"	6 13	29	"	8 6
48	"	8 7	26	"	8 10
66	"	7 1	36	"	9 12
46	"	10 5	33	"	9 7
38	"	8 1	31	"	9 11
28	"	8 8	45	"	8 6
20	"	8 11	27	"	9 4
42	"	8 1	55	"	8 8
33	"	8 2 $\frac{1}{2}$	25	"	9 10
26	"	8 1	23	"	7 9
48	"	9 7	18	"	7 10
70	"	9 2	38	"	8 7
45	"	8 0	44	"	9 2
18	"	7 11	22	"	8 5
39	"	"	27	"	9 6
24	"	7 5	38	"	8 10
28	"	9 1	21	"	6 6

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
23	5 3	8 0	66	5 3	7 1
31	"	9 1	29	"	9 10
37	"	8 5	26	"	9 13
46	"	9 0	36	"	7 11
23	"	8 5	62	"	8 0
56	"	7 13½	63	"	5 7
34	"	9 5	49	"	6 2
63	"	9 1	44	"	8 13
21	"	7 13	33	"	6 11
33	"	7 0	25	"	8 0
28	"	8 4	66	"	6 0
36	"	10 2½	52	"	7 8
40	"	8 12	18	"	7 7
27	"	9 2	48	"	8 9
45	"	8 7	47	"	8 2
32	"	7 13	30	"	7 1
36	"	9 2	20	"	6 1
49	"	6 2	39	"	7 2
50	"	7 10½	36	"	8 2
45	"	8 10	39	"	6 13
48	"	8 6	40	"	8 4
42	"	8 4	49	"	7 13
24	"	6 9	43	"	7 12½
24	"	9 0	53	"	8 7
58	"	8 11	42	"	8 10
27	"	8 3	38	"	8 4
23	"	8 11	53	"	8 0
25	"	7 2	32	"	8 12
70	"	9 1	31	"	7 7
58	"	7 8	38	"	8 2
24	"	7 13	23	"	8 5
64	"	8 3	45	"	8 11
40	"	7 9	25	"	7 12

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
32	5 3	8 5	39	5 3½	8 12
36	"	8 1	48	"	7 1
39	"	"	25	"	7 6
24	"	"	27	"	9 0
31	"	8 9	45	"	8 1
21	"	7 0	72	"	7 11
55	"	8 6	56	"	8 3
60	"	7 1	32	"	9 6
63	"	9 0	21	"	8 10
48	"	8 7	60	"	8 0
19	"	7 9	25	"	8 10
26	"	8 4	32	"	6 10
28	"	9 11	29	"	8 0
31	"	8 0	34	"	8 6
43	5 3½	"	60	"	8 2
26	"	9 6	39	"	8 1
28	"	8 10	30	"	9 2
38	"	8 9	28	"	8 7
26	"	8 1	33	"	8 12
60	"	8 7	47	"	8 4
56	"	8 9	32	"	9 8
24	"	9 1	58	"	6 12½
39	"	8 10	37	"	8 11
27	"	7 6	45	"	9 4
23	"	7 9½	31	"	9 0
52	"	8 13	34	"	8 3
28	"	7 1	58	"	10 6
42	"	8 7	38	"	9 9
41	"	6 6	47	"	8 5
34	"	10 1	31	"	9 6
43	"	8 11	22	"	8 13
53	"	8 1	30	"	8 0
39	"	8 8	25	"	8 7

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
40	5 3½	8 7	60	5 4	8 4
27	"	8 10	23	"	9 7
30	"	10 13	46	"	8 4
56	"	8 13	52	"	7 9
36	"	7 4	40	"	8 12
40	"	9 1	32	"	8 1
26	"	7 8	20	"	8 1
37	"	9 5	66	"	8 7
30	"	9 0	23	"	8 4
68	"	8 9½	21	"	7 2
42	"	8 6	22	"	8 10
28	"	8 11	36	"	8 8
25	"	8 10	21	"	6 4
47	"	"	28	"	9 10
36	5 4	8 0	29	"	7 4
34	"	9 4	61	"	6 10
48	"	6 13	35	"	8 12
35	"	9 0	24	"	7 8
25	"	8 7	41	"	8 8
36	"	8 8	36	"	7 0
28	"	8 10	59	"	7 13
29	"	7 13	41	"	8 7
39	"	7 9	34	"	8 9
51	"	8 12	50	"	8 12
55	"	10 5	45	"	9 0
41	"	8 13	28	"	8 0
23	"	8 0	31	"	7 1
27	"	9 4	26	"	7 9
19	"	6 8	21	"	9 0
20	"	6 4	27	"	7 7½
39	"	8 13	36	"	9 12
31	"	9 13	31	"	7 10
39	"	9 7	36	"	8 7

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
23	5 4	7 12	24	5 4	9 5
45	"	9 6	28	"	9 8
32	"	8 7	27	"	7 8
23	"	7 9	34	"	9 2
30	"	9 7	51	"	8 10
28	"	9 8	48	"	7 9
27	"	7 8	36	"	9 4
35	"	10 3	30	"	8 10
35	"	9 10	37	"	7 4
43	"	9 0	39	"	7 2
35	"	10 4	57	"	8 10
34	"	8 4	20	"	6 13
51	"	"	25	"	6 11
49	"	8 6	40	"	8 13
19	"	7 8	49	"	8 5
26	"	8 6	18	"	7 0
51	"	8 4	21	"	7 12
51	"	7 8	25	"	7 2
21	"	8 7	22	"	8 4
31	"	9 13	19	"	7 9
19	"	9 4	21	"	8 10
42	"	9 0	31	"	8 2½
29	"	8 7	37	"	9 8
30	"	6 7	28	"	9 6
22	"	10 2	48	"	8 10
36	"	9 6	24	"	7 13
63	"	9 0	42	"	9 1
43	"	10 7	60	"	8 7
29	"	8 1	37	"	7 6
30	"	9 8	52	"	8 9
32	"	7 7½	31	"	7 10
20	"	8 10½	23	"	8 3
30	"	9 4	28	5 4½	8 2

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
24	5 4½	6 9	32	5 4½	8 3
37	"	9 0	48	"	9 8
22	"	8 3	25	"	8 7
52	"	9 4	58	"	7 11
43	"	8 1	55	"	8 13
75	"	6 5	39	"	8 2
40	"	9 10	56	"	6 13
51	"	10 0	59	"	6 7
37	"	7 12	24	"	8 9
41	"	9 0	31	"	8 2
32	"	8 12	45	"	8 9
21	"	8 0	23	"	8 11
34	"	9 0	39	"	8 10
48	"	8 8	38	"	9 0
29	"	8 5	39	"	10 10
48	"	9 1	26	"	8 10
41	"	8 8	36	"	7 4
62	"	8 3	26	"	9 0
27	"	8 11	37	"	7 9
57	"	8 10	29	"	8 5
60	"	8 9	27	"	9 10
21	"	8 1	39	"	10 5
37	"	7 7	51	"	7 13
28	"	7 0	39	"	9 13
40	"	7 12	18	"	8 5
65	"	9 7	68	"	9 7
44	"	7 12	42	"	8 13
52	"	8 4	34	"	8 0
27	"	7 11½	50	"	9 0
26	"	8 6	20	"	8 11
22	"	8 9	47	"	9 8
46	"	9 8	26	"	9 13
41	"	8 5	37	"	8 2

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
50	5 4½	7 12	42	5 5	9 0
39	"	9 0	42	"	7 8
25	"	9 13	20	"	8 7
62	"	8 12½	23	"	8 12
62	"	8 9	56	"	7 3
26	"	8 5	35	"	10 6
62	5 5	7 10	28	"	9 11
40	"	9 7	39	"	6 1
47	"	8 5	42	"	9 1
39	"	8 2	26	"	7 13
26	"	9 7	21	"	8 7
21	"	7 4	21	"	8 5
24	"	8 4	30	"	8 7
50	"	8 12	26	"	8 0
54	"	9 4	30	"	8 5
40	"	8 4	25	"	8 8
55	"	8 9	49	"	10 10
37	"	8 0	26	"	9 7
33	"	8 3	27	"	7 13
46	"	10 1	50	"	7 4
47	"	8 9	42	"	9 0
38	"	8 0	33	"	10 11
22	"	7 7	26	"	9 0
25	"	8 1	32	"	8 7
59	"	9 12	45	"	7 10
36	"	10 0	31	"	9 11
22	"	9 5	39	"	9 10
63	"	8 13	32	"	8 10
35	"	9 7	24	"	8 7
29	"	9 2½	59	"	8 3
37	"	9 12	24	"	10 3
62	"	8 7	18	"	8 13
38	"	8 8	33	"	9 9

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
36	5 5	10 6	44	5 5	8 3
30	"	9 1	42	"	7 6
32	"	10 2	62	"	7 1
61	"	9 2	25	"	8 6
54	"	7 13	36	"	8 13
51	"	9 2	23	"	7 3
58	"	8 13	20	"	7 0 $\frac{1}{2}$
43	"	8 9	34	"	7 12
20	"	6 10	46	"	9 8
58	"	8 9	60	"	11 3
41	"	10 1	40	"	9 10
20	"	9 2	27	"	7 4
49	"	9 12	54	"	8 1
26	"	8 0	55	"	9 4
23	"	7 11	67	"	8 7
27	"	7 13	21	"	7 5
31	"	9 11	30	"	9 9
25	"	9 0	38	"	8 12
38	"	10 2 $\frac{1}{2}$	30	"	9 7
24	"	10 1	45	"	9 7
45	"	10 6	25	"	8 8
30	"	9 2 $\frac{1}{2}$	59	"	8 4
36	"	8 1	58	"	8 11
42	"	10 1	20	"	9 8
32	"	8 7	21	"	7 6
31	"	8 2	47	"	8 7
31	"	9 4	26	"	7 7
26	"	9 0	53	"	9 9
41	"	8 8	48	"	10 11
45	"	8 0	40	"	8 6
22	"	8 1	58	"	8 8
58	"	9 2	27	"	8 3
65	"	8 12	41	5 5 $\frac{1}{2}$	11 0

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
30	5 5½	9 0	37	5 5½	8 11
56	"	9 7	55	"	9 12
32	"	8 2½	51	"	9 10
50	"	9 10	42	"	9 11½
33	"	8 13	26	"	8 6
41	"	8 10	56	"	7 11
23	"	8 8	41	"	9 4
66	"	11 8½	27	"	8 10
57	"	9 6	36	"	10 0
61	"	9 0	57	"	7 11
39	"	9 8	45	"	9 0
23	"	9 8	30	"	9 2½
26	"	11 7	39	"	9 11
19	"	8 1	26	"	9 2
74	"	9 6	29	"	9 3
26	"	10 2	45	"	10 10
29	"	8 9	46	5 6	9 4
43	"	11 6	36	"	9 2
43	"	8 7	26	"	8 7
26	"	9 2	28	"	8 2
28	"	8 3	30	"	8 6
30	"	8 5	34	"	10 4
46	"	7 10	42	"	8 5
21	"	8 2	24	"	9 7
29	"	8 8	59	"	8 4
56	"	8 8	42	"	9 0
55	"	8 6	50	"	9 2
18	"	9 4	30	"	8 12
27	"	8 4	31	"	8 9
39	"	8 13	30	"	8 10
32	"	8 3	50	"	7 12
44	"	8 3	33	"	8 4
61	"	9 0	20	"	8 12

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
56	5 6	8 6	50	5 6	8 8
36	"	9 5	26	"	8 12
37	"	9 1	23	"	8 9
55	"	9 5	52	"	10 1½
49	"	9 13	51	"	8 6
60	"	8 4	25	"	9 4
36	"	10 6	24	"	8 5
30	"	9 0	44	"	9 12
28	"	8 1½	49	"	8 12
32	"	8 0	24	"	9 8
24	"	8 7½	40	"	9 13
18	"	9 10	44	"	9 12
57	"	8 4	37	"	9 3
54	"	9 2	46	5 6½	10 4
44	"	8 3	46	"	9 5
56	"	9 9	35	"	9 9
31	"	7 1	26	"	10 7
69	"	9 2	38	"	9 13
46	"	9 4	24	"	9 7
40	"	10 5	43	"	10 9
50	"	9 10	64	"	9 11
34	"	9 7	49	"	8 7
22	"	7 13	19	"	8 7
41	"	8 4	33	"	9 7
36	"	9 3	27	"	8 2
67	"	9 3	31	"	9 7
28	"	9 3	48	"	9 4
40	"	9 5	41	"	9 10
47	"	10 0	58	"	10 2
25	"	8 3½	20	"	9 10
28	"	9 0	22	"	8 7
35	"	9 8	47	"	10 5½
39	"	9 5	56	"	10 3

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
40	5 6½	9 0	38	5 7	8 7
24	"	8 7	37	"	10 4
34	"	8 5	26	"	10 2
29	"	8 13	45	"	8 1
44	"	11 2	63	"	9 13
33	"	9 6	20	"	9 10
40	"	9 0	43	"	10 13
79	"	7 10	62	"	8 13
33	"	8 4½	35	"	8 7
34	"	8 9	35	"	9 0
25	"	8 4	40	"	9 0
32	"	7 12½	31	"	9 0
51	"	11 0	33	"	7 0
51	"	8 12	26	"	7 9
28	"	8 7	26	"	8 12
35	"	10 0	30	"	8 6
36	"	9 12	40	"	9 12
45	"	10 0	46	"	9 3½
20	"	9 8	20	"	8 4
32	"	7 2	23	"	8 6
35	"	9 2	32	"	9 13
31	5 7	10 3	33	"	10 1
30	"	8 13	25	"	9 6
33	"	9 8	20	"	9 8
41	"	8 13	26	"	9 4
24	"	9 0	41	"	9 13
30	"	8 11	62	"	10 5
32	"	8 4	19	"	8 11
23	"	9 11	24	"	9 12½
24	"	8 8	48	"	9 6
35	"	9 8	56	"	12 3
23	"	7 7	43	"	8 13½
20	"	9 9	21	"	9 5

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
34	5 7	8 8	37	5 7½	10 2
37	"	9 0	52	"	11 0
50	"	8 10	27	"	12 6
35	"	8 12	38	5 8	10 5
22	"	10 0	24	"	8 11
24	"	8 0	41	"	9 7
48	"	10 10	42	"	9 6
24	"	8 12	22	"	9 6
46	"	7 7	24	"	8 3
29	"	9 9	27	"	8 12
55	"	8 3	29	"	8 7
62	"	8 9	30	"	8 11
22	"	9 1	20	"	10 8
42	"	10 0	32	"	9 8
46	"	9 0	30	"	9 7
48	"	8 5	54	"	9 2
44	"	9 7	34	"	9 6
36	"	8 6	50	"	10 2
43	5 7½	10 6	21	"	10 3
42	"	9 0	60	"	9 5
22	"	8 8	34	"	9 0
64	"	8 10	30	"	8 11
64	"	8 11	22	"	8 8
60	"	9 10	49	"	9 13
56	"	8 9	24	"	9 2½
47	"	9 6	26	"	10 1
29	"	9 13	32	"	8 3
30	"	10 7	70	"	9 7
32	"	8 7	40	"	8 7
40	"	8 13	41	5 8½	7 12
46	"	9 0	38	"	10 9
24	"	9 5	50	"	8 13
37	"	9 13	18	"	9 0

Age.	Height.	Weight.	Age.	Height.	Weight.
	ft. ins.	st. lbs.		ft. ins.	st. lbs.
27	5 8½	10 5	73	5 9	11 0
26	"	9 12	57	"	7 2
30	"	11 4	47	"	9 6½
41	"	12 0	74	"	9 6
25	"	11 0	33	"	10 9
25	5 9	9 0	31	5 9½	11 0
31	"	9 5	33	"	9 7
30	"	10 3	21	5 10	9 13
36	"	10 11	27	"	9 10
37	"	11 2	43	"	9 0
26	"	8 0	47	5 11½	9 10
24	"	9 11			

WITCHCRAFT IN NYASA (*MANGANJA*) YAO (*ACHAWA*).

COMMUNICATED BY A NATIVE TO H. W. GARBUTT.

Note.—A witch or wizard can be a male or female; in these notes they are all treated as "male."

WHEN anyone wishes to learn how to bewitch, he goes to a person who is suspected of being a wizard and asks him if he can make the applicant famous (*kuchuka*), as it is impossible to go and ask to be made a wizard. The wizard then asks him if he has any relative—or a sister or mother of a relative or an aunt—who is expecting a child. No one can be taught the profession unless he has a relative in this condition. If he has, the wizard tells him to go home and wait until the child is born. Should it be born dead, the applicant learns where it is going to be buried and reports to the wizard. After the burial the teacher and pupil go to the grave and dig out the body. The wizard cuts the body open and takes out the liver and heart, mixes them with some ground roots (*mitsitsi*), roasts them, and gives them to the pupil to eat.

The wizard also gets some roots out of the bush, mixes them with the nostrils, carpal bones, and hair of the forehead of a hyena, burns them and mixes the ashes with castor oil (*ntsatsi*). This mixture he puts into the tail of a hyena. He also makes a necklace of human teeth, thumbs, dried eyes, ears, nose, and privates, and gives it to the pupil.



All wizards are said to possess tame hyenas and owls which they keep in a cave and feed with human flesh every day. When the pupil has finished his course of instruction his teacher supplies him with a hyena and an owl. Wizards are also supposed to keep human blood hidden in a cave and to give some every day to their pupil.

Wizards are said to be able to get into huts at night without disturbing the sleeping inmates. This they do by means of the above-mentioned doctored hyena tail. When they come in front of the hut they tie the tail into a knot and push the door open, enter, and finding everyone fast asleep, make exhibits to the sleepers, stabbing each one with a poisoned needle in any part of the body. The hyena tail in Nyasaland is a very serious thing to the natives, and an important part of a thief's outfit. They use it to make people sleep, and then dig under the foundations of the hut, get inside and take away everything they can carry. They also play jokes on people by shaving their privates. These thieves are called *Chitaka*, and came from Mangulu in Portuguese territory into Blantyre after the famine in 1902. They are said to be able to kill a goat without letting it cry out,

or to steal from the hut of any wizard except the *Mabisalila*. Many of the Atonga (Baudawe) natives also know the magic theft.

There are four classes of witch doctors :—

1. *Waula*—the bone thrower.
2. *Mapondela*—the ordeal poison pounder.
3. *Mabisalila*—the witch hider.
4. *Mabrumbula*—the pointer.

When anyone is sick the relatives go first to the bone thrower (*waula kukambiza*) to find out who is bewitching the sick person. The bone thrower asks for the names of the people living at the kraal. This information having been supplied, he says to his bones, "*Tamvatu muranawe tandinza usaukwe weka*" (Just listen, my boy; tell me and choose amongst these names by yourself). He continues "E! E! E!" and then mentions the name of the person who is suspected of bewitching the sick person. The relatives return home and send for the ordeal (*mwabri*) poison pounder (*Mapondela*). He gets the ordeal poison, called by the natives *mwabri*, and made from the bark of the tree of that name. When *Mapondela* is getting this bark he takes only the pieces which fall open , not those which fall flat . That which falls flat is called *mpelanjilu* (poison). *Mapondela* keeps the *mwabri* ordeal poison in a bag made out of baboon skin. When he arrives at the kraal of the sick person, the relatives hide him. Early in the morning the headman of the kraal shouts with a loud voice, "*Musadie nsima musadie kanhu*" (Do not eat porridge or anything else); he then orders a young man to call together all the people in the kraal. The people come and go with the headman to the fields (*panthando*). There *Mapondela* appears in full dress, leaping and singing, "*Dzanza lamanzele lilipanyama*." (The left hand is at the meat.) He pounds the *mwabri* whilst singing and mixes it with the excrement of foxes, owls, hyenas and dogs' urine, and calling the people one by one, makes them drink this mixture out of a filthy cup. He also tells his friends to watch the people, some of whom presently die, and some vomit; those who die are guilty, and those who vomit are innocent, but have to pay the doctor. The dead bodies are left lying at the ordeal drinking place (*nthando*) and are eaten by the birds and wild animals.

3. *Mabisalila*.—When a person dies, the brother or son goes to *Mabisalila* and asks him to go to the mourning kraal. *Mabisalila*, two boys, and the relative of the deceased travel together and reach there secretly, at night, so that the people may not see them. *Mabisalila* asks when the funeral takes place. They will probably say, "To-morrow." *Mabisalila* and the relative go out early to the burial place and measure a place where the body has to be buried. *Mabisalila* and his two boys are then left hidden in the bush and the relative returns to the kraal to join the others in carrying the body to the grave. The messenger does not tell anyone that *Mabisalila* is hidden near the grave. They dig a pit in the place appointed by the messenger (the place *Mabisalila* measured). When the pit is about 8 feet deep they make a room in the side of the pit and into this room they place the body,

they stick sticks in the ground and cut a piece of mat so as to separate the body from the mud, then they close the pit and return to the kraal. Before reaching the kraal they go to a river or brook and wash; the women wash down the stream and the men up the stream. When they reach the kraal they find a goat killed and cooked, but before eating it they burn the hut of the deceased. As soon as possible the relative slips away from the crowd and returns to the *Mabisalila*. *Mabisalila* has provided himself with poisoned skewers and a koodoo horn.

Wizards are supposed to visit the graves before dark, because they are afraid of snakes. They come in a whirlwind, *Mabisalila* blows his horn, the wizards then become blind and fall down, and *Mabisalila* stabs them with his poisoned skewers and breaks them off. When he has finished doing this he orders his two boys to race home; he remains with his victims; stooping, he again blows his horn to wake them up. The wizards scatter away, but return to the grave for revenge, but they see no one, as *Mabisalila* ran away with them, but they did not recognize him, and, instead of returning to the grave with them, he ran home. The next morning all these victims cannot sit up straight owing to the broken-in points of the poisoned skewers, and in a few days some of them die and the skewer ends are found in their flesh.

4. *Mabvumbula*.—When natives are always sick in their kraal the headman agrees to find, or call in, the witch pointer. He sends one of his men to the *Mabvumbula's* kraal with two fowls. On arriving the messengers clap their hands in front of *Mabvumbula*, saying, "We have been sent by our headman to disturb you and to ask you to come and dance in front of your slaves to-morrow morning." In reply *Mabvumbula* simply nods his head. The messengers return home and tell the headman that the doctor has accepted the fowls.

Early the next morning the witch pointer comes, bringing with him a koodoo horn, small buck's horn, zebra's tail, and a pot of castor oil. He is dressed in full dress of wild animal skins and brings boys with him. On his arrival he finds the headman and all the people of the kraal waiting for him. The *Mabvumbula's* boys beat the drums; he dances, holding the zebra tail in his right hand and the koodoo horn in his left, and the castor oil (*ntsatsi*) pot on the ground near him. The small buck's horn hangs from his neck, attached to a piece of hyena skin. The people are formed in a circle round him. He sings, "*Mousesmu ndatseula ndaona lelo sindinaziwouu*" (I have been travelling through country to-day which I never saw before). He dips the zebra tail in the oil pot and swings it round on to the people whilst he whistles with the small buck's horn. He tells all the people to look earnestly at him and he points the koodoo horn at each one. Then soon he springs and hits with the tail the one suspected of being a wizard. At once his boys tie up the suspected person or persons and take them off to be burnt or stoned. A good headman does not allow this unless he has previously sent for an ordeal poison pounder to make an examination by the ordeal.

Namlondola (Theft Doctor or Pointer).—Whenever goods or sheep are stolen by the magic thieves (*Chitaka*), the owner of the property gets permission from

the headman of the kraal to call in *Namlondola*. He then goes to the theft doctor's kraal and presents the doctor with two yards of calico and says, "Master, I am your servant who has lost all his goods and has nothing left; please accept this piece of calico and follow me to-morrow." The doctor replies, "Yes, my son." When the owner of the stolen goods returns home he does not tell the people at his kraal that he has been away engaging the services of the theft doctor. Early in the morning *Namlondola* arrives, bringing with him the horn of a koodoo or eland. Marking his face with a red paint, he goes to the headman of the kraal and tells him that he has been called to this kraal by one of the inhabitants in it. The headman calls the man who has lost his property and tells him to find four strong men. When these men are found they go with the doctor to the place where the goods used to be, and *Namlondola* tells two of the men to lift up the horn and the other two to press it down. The horn moves forward and follows the thieves' spoor to the place where the goods are hidden; here it slips from the four men's grasp and falls down. The four men dig and the goods are found. If they are found in a hut the owner of it is considered to be the thief and is tied up. If he is well known he is fined a slave and a number of goats and sheep, but if he is a "nobody" he is burnt. When the goods are found in the bush *Namlondola* says to his horn, "Now, friend, show me where the thieves are." The four men then grasp the horn as before and it seems to pull all four men until it arrives at the thieves' kraal and takes them to the hut of the head thief. The four men tie up the owner of the hut until he discloses the names of his accomplices. If they were common people they were burnt, and *Namlondola* was allowed to take away from their huts all he could carry and was also paid a fee of two goats by the owner of the stolen property.

Mischievous Youths.—When a boy of ten to fourteen years of age steals chickens, eggs, etc., the parents may decide to punish him. To do this the mother takes hold of his left hand and shoves it into some hot ashes and pours cold water on to them. Though the youth cries out the mother does not stop until the vice is scalded out. This is to teach a boy that when he grows to manhood, if he steals, his whole body will be burnt.

THE TAMANS OF THE UPPER CHINDWIN, BURMA.

BY R. GRANT BROWN, I.C.S.

[WITH PLATES XXXVI-XXXIX.]

THE following note on the Tamans appears in the Report on the Burma Census of 1901 (Part II, page 128). It appears to be the only reference to them which has yet been published.¹ They are not mentioned in Sir George Scott's *Gazetteer of Upper Burma*, nor yet in the *Imperial Gazetteer*.

"Mr. Smyth, Deputy Commissioner of the Upper Chindwin, has sent me a few particulars regarding what is probably a hybrid tribe found in the Homalin and Uyu townships of that district, and known as the Tamans. Their name as well as their habitat would appear to hint at a Burmese-Shan mixture, but their language, like Kadu, shows marks of a Kachin influence. Maung Myat Tun Aung, Subdivisional Officer of Legayaing, who has furnished the particulars above referred to, thinks that the Tamans are not Shans, but it appears probable that there is now more Shan than anything else in their composition. It seems to me that a study of the Tamans side by side with the Kadus might yield exceedingly interesting results. They numbered 829 persons in all."

The Tamans show no very marked difference in feature from the races living round them. Thirty heads measured by me had indexes varying from 70·7 to 90·2, with a mean of 79·1. The average height was 5 ft. 2½ in. Like the so-called Shans of this district, they wear Burmese dress. They profess Buddhism, but, as will be seen, they have hardly, if at all, begun to forsake their earlier religion. They are regarded with some fear by their neighbours on account of their supposed magical powers.

The Taman language is spoken at Tamanthi, on the right bank of the Chindwin in 25° 21' N., 95° 21' E., with the neighbouring villages of Twetwa and Nantalet, and by a few families at and near Intha, some distance to the east of the same river, in 24° 11' N., 94° 51' E. The Intha people are said to have fled from Tamanthi when it was attacked by Kachins over a hundred years ago. North of Tamanthi the banks of the Chindwin have a sparse population, mostly Shan-speaking, but

¹ Since the above was written Mr. Lewis' *Tribes of Burma* has been issued by the Ethnographical Survey of India. It contains, on pages 26 and 27, a brief note on the Tamans, with a reference to materials collected by me in 1908, which have been utilized in this article.

composed of Taman, Naga, Kaehin, and Shan elements, the first two probably predominating. The mountains to the west are peopled by Nagas, and to eastwards the country, which contains no mountains, is uninhabited until the Uyu is reached, nearly thirty miles away. Downstream to Homalin, near the Uyu mouth, all the people call themselves Shans. The headmen of several large villages, however, have admitted to me a tradition that their ancestors came from the mountains on the west, and were Tangkhul Nagas, and there can be no doubt that Nagas who have adopted the Shan language and Burmese dress form the bulk of the population.

The following statement is from the lips of the Pawmaing, or superior headman, of the Tamanthi group of villages. He bears a Burmese name. The Burmese include Nagas in the term "Chin." The hills to the west of Saramati are the Naga Hills.

Tamanthi, 30th October, 1908.—Maung Chein, Tamanthi Pawmaing, states:—

"I am a Taman on both sides, and speak the language. It is quite different from Chin, or Shan, or Kadu, but is a little like Kachin. My father spoke Taman, Shan, and Burmese, like myself, but my grandfather spoke only Taman and Burmese. The use of the Shan language is increasing among the Tamans.

"I heard from my father and grandfather that the Tamans came from the east, from the Indawgyi Lake, where they used to live before it became a lake. They first went to the mountains to the west beyond Nwemauk (Saramati), but as they did not get on with the people there they came back and settled in the Chindwin valley. Before they lived in the basin of the Indawgyi Lake they came from the Shan States, still further east. In the time of my great-grandfather the Kachins came down from the north, from beyond the rapids, and fought with our people, many of whom fled in various directions, some to Mogaung, some to Wuntho, some to Kindat. The Kachins went back to their country, none of them settling here.

"There are many Tamans in all the villages in Homalin township and many others in Paungbyin. They are also found in Kindat, and even in Monywa and Mandalay, but they have forgotten the language and call themselves Burmans.

"There used to be people at Tamanthi who could turn themselves into tigers, in the time of my grandfather, but there are none now. If a man wanted to turn himself into a tiger he made water on the ground, stripped himself, and rolled on the earth he had wetted. He could then fight and kill other tigers. Villagers who had turned themselves into tigers used to take buffaloes and fowls. Traps with guns were set for the tigers, and men were sometimes found in them, the tiger having turned into a man again. It was owing to this that the custom ceased.

"It is quite true that anyone taking a Taman's property without leave is suddenly paralysed and thrown into convulsions, and dies if the owner does not intercede for him. This often happens when strangers come into a house and take up something. It would always happen on an outsider taking up anything in a house, unless the house-owner tells the *nats*¹ not to 'bite,' taking a grain of rice in his mouth at the same time and spitting it out. I have seen men smitten myself. Only last month Aung Ke was passing Kya Do's house with some bamboos, when he knocked them against the side of the house. I was sent for and found him rolling on the floor of his house in convulsions.

¹ Spirits.

He was not seized at once, but about half an hour after he knocked against the house. He was given medicine and asked what he had eaten. He said he had eaten nothing, but had knocked against Kya Do's house when passing with his bamboos. It was then decided that he must have been bitten by Kya Do's rice-*nat*. Kya Do was sent for, and chewed a grain of rice and spit it out again, asking the *nat* not to bite and saying that Aung Ke was his friend. Aung Ke immediately got all right.

"It is said that no one will steal a Taman's property, through fear of the *nat*, but I have known Tamans' things stolen just like anyone else's without anything happening. Thieves are not always bitten: on the other hand honest men sometimes are, for no reason.

"We worship the *nats* regularly twice a year, in Wagaung¹ and Tabodwè.² The same ceremonies take place on each occasion. The Wagaung festival is held when transplanting of paddy is done, the Tabodwè one after the main harvest. Besides these regular times, we worship at any time if there is any occasion for it. Fowls and pigs are killed and offered, and then some *kaung*³ is offered, and the rest drunk. Eight tumblers of *kaung* are offered four times at intervals through the day. Each man is smeared with a little blood in different parts of his body, by a man who is called the *nat*-keeper (*nattein*). This appointment is hereditary, descending from father to son. He gets an extra share of the meat, etc., and a portion of paddy from each house at the time of the feast, but he is not supported through the year by the village, and works like any other villager. He is treated like any other villager, not like a *pongyi*.⁴ Offerings are made to the *nats* when the crops are attacked by insects, and the insects always disappear. Disease has been kept off in the same way when many people had died at other places.

"The offerings are specially made to the *nat* of the village, the *nat* of our ancestors, but prayers for a good harvest, etc., are always offered to the *nat* of Nwèmauk (Saramati),⁵ who is mentioned by name, the worshipper addressing him as *Nwèmauk àshin-nat-kyi*. *Nwè* is the Shan *noi*, a mountain, and *mauk* means a flower, and also snow or mist. The worshipper does not turn to the mountain when addressing it. There is no legend about either *nat*.

"Everyone smears himself with the contents of fowls' eggs from time to time as a precaution against tigers, especially if anything has happened to make him do so. For instance, tigers often throw clotted blood at houses. This means they want eggs, and will kill someone if they are not given. The people of the house then all smear themselves with the contents of eggs and throw the shells away into the jungle outside the village. When we are out in our *taungyas*,⁶ too, tigers sometimes steal our clothes, and we then have to smear ourselves with eggs.

"Malin is not a Taman village, but a Malin village. The Malins are different from the Tamans, though they speak a language something like ours. Sometimes we can understand what they say, sometimes not. There are Malins at Tamanthi, Maungkan, and some other villages, but there are not as many of them as there are of Tamans. They intermarry with us, and have always done so. We never used to intermarry with the Shans, but are beginning to do so now."

Since the above was recorded, I have conversed with several Tamans on the Uyu and Chindwin, including the Pawmaing, and have obtained the following

¹ August.

² February.

³ Rice-beer.

⁴ Buddhist monk.

⁵ The highest mountain in Burma (12,557 feet), 32 miles from Tamanthi.

⁶ Hill-clearings.

details regarding their origin. It is said that they once lived in a place or country in China called Ôkkat; that they wore trousers, used chopsticks, and generally followed Chinese customs; that they migrated to the site of what is now the Indawgyi Lake in Myitkyina district ($25^{\circ} 8' N.$, $96^{\circ} 23' E.$); that the lake was formed suddenly, and thousands were drowned; that the survivors fled in terror to the mountains west of the Chindwin, where they thought themselves safe in the event of another deluge occurring; that here, cut off from the rest of the world, they lived the life of the hillmen, and dressed like the Nagas, with only a strip of cloth to hide their nakedness; and that at last they descended the Nantaleik and other streams to the Chindwin, and adopted Burmese-Shan customs. This story receives striking confirmation from the fact that chopsticks are placed with food offered to the gods, for no one in Burma eats with chopsticks except the Chinese. It is well known that tribal or national customs linger on in religious ceremonies long after they have been abandoned in ordinary life. The admission of the descent into savagery, too, makes it improbable that the story is altogether an invention.

I have not been able to identify Ôkkat, but, as pointed out by Mr. E. C. S. George, C.I.E., Deputy Commissioner at Mogok, there is a place called Hokat on the Irrawaddy, about fifty miles due east of the Indawgyi Lake. This may be named after a place or district in China, and the name may quite possibly have been given to it by the Tamans on their way to the lake.

Mr. Lewis, late Superintendent of Ethnography in Burma, has called my attention to the article on the Indawgyi Lake in the *Upper Burma Gazetteer*. This mentions a local legend, according to which the lake was once inhabited by a people called Tamansai. (Tamansai is the Shan form of Tamanthè or Tamanthi, the alternative name for the Tamans and the name by which their present headquarters is called.) This people incurred the displeasure of the god of the lake, and all but one old woman, who was warned by a dream, were drowned and became fish. The posts of their houses are still visible under the water. The writer of the article evidently had no idea that a people called Tamansai were still in existence.

The statement that house-posts are still visible will be investigated next April, when the lake is at its lowest. I have not been able to get any confirmation of it in time for this article.

The recent history of the Tamans as told by the Pawmaing is not without interest. According to this there was rivalry between his great-grandfather, who was Myoza of Tamanthi, a title inferior to Sawbwa, and the Shan Myoza of Maingwè, on the other bank of the Chindwin, eighteen miles further down. Both were sent for by the Burmese King, but the Maingwè Myoza did not go, and the Pawmaing's great-grandfather was appointed Sawbwa of the whole valley of the Chindwin from the Falls, about latitude $26^{\circ} 15'$, to the neighbourhood of latitude 25° . While he was Sawbwa a body of Kamti Shans from Great Kamti (above latitude 27°) appeared on their way south, and he offered them an asylum. They stayed for a while at Nanmanin on the Nantaleik, some way above Naungmo, the scene of the massacre last February, and then offered to man an outpost which

the Sawbwa had placed against the Kachins by order of the king at the village then called Singalein and now Kanti, a little below the Falls. This was agreed to, and they founded what is now the State of Kanti. Meanwhile the Maingwè Shans were intriguing against the Sawbwa, and he was murdered by some of his own people, who had been persuaded to turn against him. This angered the Kachins of the north, who were friendly with the Sawbwa, and three thousand of them came down and destroyed Tamanthi. No new Sawbwa was appointed there, but the Maingwè Myeza gained nothing by his intrigues, for he was reduced to a mere headman under a Burmese official, and a Sawbwa was created at Kanti. This, according to the history of Kanti State, was in the time of King Bodaw, who reigned from 1781 to 1819.

The English words in the list given below are taken from the comparative vocabulary at the end of Hanson's *Kachin Dictionary*. Those marked with an asterisk are in the standard list of words in Grierson's *Linguistic Survey*, which has become available since the vocabulary was first prepared. Those marked with a dagger are in the list of Kadu words on page 691, Part I, volume i, of the *Upper Burma Gazetteer*.

The second column shows the Taman word as written down by me after hearing it repeated by three men and two women. I have used the alphabet of the International Phonetic Association.¹ So far as I am aware this is the first time the alphabet has been employed for committing an unknown tongue to writing; it has hitherto been used mainly for teaching the correct pronunciation of European languages. The alphabet, however, is admirably suited for the purpose for which it is now employed, and as there is no system of notation in general use (though there are several based, like it, on the Continental pronunciation of the vowels, the English pronunciation being obviously impossible as a basis) it might well be adopted by ethnologists and others who have to put strange sounds into writing. The system is not, of course, an ideal one, for it is a compromise, and no compromise is ideal. But, while it differentiates sounds with sufficient accuracy, it is easily intelligible to anyone who can read the Roman character, and can be printed without excessive expense, a consideration which has led to the use of inverted letters in place of diacritical marks or new characters. In both these respects it has a great advantage over the more scientific systems of visible speech which have been invented.

The Shan, Karen, Tibetan, Yawyin, Atsi, and Chinese words in the third column have been taken from Hanson, the spelling being of course retained; the Kachin and Chin words from Hanson, corrected where possible by Grierson; the Burmese from my own knowledge; the Sengkadong Naga from a vocabulary prepared by me, on the basis of Grierson's standard list, of the dialect of the nearest Naga neighbours of the Tamans; the Kadu from the *Upper Burma Gazetteer*; and the remainder from Grierson's *Linguistic Survey*.

¹ Mr. D. Jones, 74, Gloucester Place, Portman Square, London, W., represents the Association in England.

A key to the pronunciation is prefixed to the vocabulary. The mark (') to distinguish aspirated letters is not prescribed by the International Phonetic Association, but is indispensable.

The sound system, though not quite so simple as the Burmese, is very much simpler than that of the Naga languages. The only Taman sounds unknown in Burmese appear to be λ , v , \ddot{e} , v , and x . The combination ts (the two sounds are pronounced as nearly as possible together) was a common Burmese sound until a generation or two ago, and in old English books on Burma ts is always written for the sound now pronounced as a pure s . The v appears to be interchangeable with w . The sound λ seems rare, and is not used in the vocabulary, but is found in " $xapte$," the name used by Tamans of themselves.

On the other hand the Burmese sounds θ , tj , and their corresponding sonants δ , dj , appear to be unknown in Taman. The Burmese θ (our *th* in *thin*) is merely a modern form of s , and the old pronunciation is retained in Taman (*e.g.*, in the word for *three*), as in some dialects of Burmese. The sounds I have written tj , dj , are possibly identical with the Association's c , j , which are found in Magyar.

The enunciation of the Tamans I have met is particularly indistinct. The lips are hardly moved, and there is a tendency for most of the vowels to take the loose form even when they are long and final. Thus the vowel in $t\dot{i}$ _, water, is pronounced almost i (our *i* in *tin*). This lazy pronunciation is also characteristic of the Nagas in the neighbourhood.

It is difficult to pronounce on the tones of a language without an intimate knowledge of it, which I do not possess in the case of Taman; nor is there any Taman of sufficient intelligence to explain. The Pawnaing told me that the tones were the same as in Burmese, but that is certainly not the case. As far as I can ascertain there are only two tones, the high (ˀ) and the low (ˁ). One of these appears in the word for "water," which is $t\dot{i}$ _, while that for egg is $t\dot{i}$ ˀ. Some other words with the same ending may be pronounced with indifference in either tone. Thus vi , a dog, may be pronounced either vi ˀ or vi ˁ without altering the meaning. This is not the case in Burmese, where with certain endings one of three tones must be used, any other being wrong. The Burmese check tone appears to be absent. The final vowel is often short, even when accented, but this is the case in French, and is quite a different thing from the sharp closure of the glottis, combined with a falling tone, which is found in Burmese.

The final consonants are treated as in Burmese and apparently most other Tibeto-Burman languages: that is, they are only half uttered. Thus in the English final t , after the passage is closed by the tongue, the closing parts are smartly separated, producing a distinct sound called by Sweet the "off-glide." In Burmese and Taman this action is omitted, and the parts separated gradually and silently.

In addition to this vocabulary I have obtained the Taman equivalents of most of the words and phrases in Grierson's standard list, and have paid some attention to

the syntax. From these materials, and the brief grammars in Grierson's *Survey*, I deduce the following facts:—

- (1) The Taman vocabulary differs widely from those of all other languages and dialects in Burma and Assam.
- (2) It has a few roots in common with Kadu which are not found in the other languages, but most of the roots available show no resemblance whatever.
- (3) The vocabulary of the Sengkadong Nagas, the nearest neighbours of the Tamans, is if anything further removed from the Taman than that of most of the Naga tribes, though it supplies the nearest form of the word for "six." The sound system and the syntax also show very wide differences, both being far more elaborate than in Taman. On the whole the Taman language has hardly more roots in common with Naga than with Burmese.
- (4) Kuki-Chin and Kuki-Naga, though neighbours, show no more marked affinities, either in vocabulary or language, than do the rest of the Tibeto-Burman group.
- (5) The language has a considerable proportion of roots in common with Kachin. There seems no particular reason to suppose that these have been borrowed, as the nearest Kachin village is nearly a hundred miles away; the Kachins have never come into contact with the Tamans, so far as is known, except in an occasional raid; and they are known to be comparatively recent arrivals in Burma from the north. On the other hand the syntax shows no very close resemblance as compared with other Tibeto-Burman languages.
- (6) One would expect to find many words borrowed from the Shan, the language which the Tamans hear far more than any other, and which, with the exception of Kadu, is practically the only language spoken in their homes by the people of the plain for a degree of latitude above and below them and a degree of longitude to the east. Yet the list contains no words that are obviously borrowed. At first sight *vè*, the word for "fire," which is *mi* in Burmese, Chin, and Naga, would seem to be borrowed from the Shan *fi*, but the fact that Kachari, Kachin, and Kadu all show what are apparently allied forms makes this improbable. The words for "good," "body," and "flesh" seem to have the same roots as the Shan, but are not of a class likely to be borrowed. On the whole it seems probable that the resemblances are due, not to borrowing, but to the fact that Shan, like Karen and Chinese, belongs to the same great family of languages, though to a different group from the Tibeto-Burman, to which Taman presumably belongs.
- (7) Lastly, the vocabulary shows no greater resemblances to Burmese

than to other languages of the Tibeto-Burman group, and less than it does to Kachin. In structure and idiom, however, the similarity is remarkable. In this respect Taman is nearer to Burmese than either Chin or Kachin, and a great deal nearer than the Naga group. Indeed the particles differ hardly more than those of the spoken Burmese from those of the written language; that is, the roots are different, but the use and meaning, as well as the order, are almost identical. An ordinary Burmese sentence can be translated into Taman almost word for word, without changing the order, just as it can be translated into literary Burmese.

From these facts I conclude that Taman is a member of the Tibeto-Burman group; that it forms, by itself or possibly with Kadu, a separate branch of that group, like Tibetan, Naga, Chin, Burmese, or Kachin; and that of these branches it shows the nearest affinity with Burmese and Kachin, but especially with the former.

Malin, mentioned in the last paragraph of the Pawmaing's statement, is 17 miles upstream from Tamanthi, on the other side of the river. A vocabulary has been made with the assistance of two old women, who appear to be the only persons now living who really know the language. Even they have nearly ceased to speak it, and it may almost be regarded as dead. It is, however, very closely allied to Taman, being almost as near, perhaps, as Italian and Spanish, and far nearer than the Naga dialects are to each other. The eight persons in Plate XXXVI, Fig. 2, are the only pure Malins who could be found in Malin village. They have a tradition that, with the Tamans, they came from the Nantaleik Valley, now inhabited by wild Nagas, and that they once wore Naga dress.

KEY TO PRONUNCIATION.

a	as in F. <i>patte</i> , part.
q	„ E. <i>father</i> .
e	„ F. <i>les</i> .
è	„ E. <i>men</i> .
i	„ E. <i>machine</i> .
ì	„ E. <i>it</i> .
o	„ F. <i>nos</i> .
u	„ E. <i>rude</i> .
ù	„ E. <i>put</i> .
o	„ E. <i>amiss</i> .
ɐ	„ E. <i>burn</i> .
ʌ	„ E. <i>but</i> .
ɔ	„ E. <i>paw</i> , F. <i>note</i> .
ɔ̃	„ E. <i>not</i> .

ë	a sound apparently partaking of <i>e</i> and <i>ʌ</i> , as defined above; approaching the F. <i>peu</i> , but formed quite differently, with the lips loose.
k, p, s, t	as in French.
ḳ, p̣, ṣ, ṭ	aspirated as in English, but more strongly.
j	as in English <i>yes</i> .
x	„ German <i>ach</i> .
ɟ	„ <i>song</i> .
ʃ	„ E. <i>shy</i> .
—	indicates a high tone.
—	„ low „
\\	„ falling tone.

English.	Taman.	Compare. §
One* †... ..	tə	Karen <i>tō</i> , B. <i>tīt</i> .
Two* †... ..	nek	B. <i>huit</i> , Tib. <i>nyi</i> .
Three* †	sùm	B. <i>thon</i> , O.B. and Tib. <i>sum</i> , etc.
Four* †	pəli	E. Naga <i>peḷi</i> .
Five* †	məpə	Kch. and Naga <i>manga</i> , B. and Tib. <i>nga</i> .
Six* †	kwa	Sengkadong Naga <i>kʷə̀kʷə̀</i> , Kadu <i>kok</i> .
Seven* †	sənè	Kch. <i>sinit</i> , Naga <i>scni</i> , etc., B. <i>kühnit</i> .
Eight* † (not in Han-son)	pəsè	Kch. <i>masat</i> .
Nine* †	təxə	Naga <i>takhu</i> , Kch. <i>chaku</i> .
Ten* †... ..	ʃi	Kch. <i>shi</i> , Tib. <i>chu</i> , B. <i>śè</i> , Kadu <i>shim</i> .
Ape	jùn	—
Arm, hand* †... ..	la	B. <i>let</i> , O.B. <i>lak</i> , Kch. <i>lata</i> , Tib. <i>lagpa</i> .
Arrow	pələ	—
Axe	wətùm	Atsi <i>wa</i> .
Bag	tùmbo	Shan <i>htung</i> .
Bamboo	wə	B. and Karen <i>wa</i> .
Bat	səp̣pula	Yawyin <i>wala</i> .
Bear	śap	Kch. <i>tsap</i> .

§ B. = Burmese. O.B. = Old Burmese. Tib. = Tibetan. Kch. = Kachin. E. Naga = Eastern Naga. M. = Meithei or Manipuri.

English.	Taman.	Compare. §
Bee	ùṇṇ	—
Big	lway	Chin <i>len</i> .
Bird*†	kəṭ/eksə	Andro (Manipuri) <i>ujiksa</i> , Aimol (Old Kuki) <i>kache</i> .
Bitter	xə	B. <i>kə</i> , Atsi <i>hkuaw</i> .
Blood†	še	Kch. <i>sai</i> , Kadu <i>se</i> .
Boat	li	Kch. <i>li</i> , B. <i>hle</i> , etc.
Body	tu	Shan <i>tu</i> .
Bone	rap	Kch. <i>nra</i> .
Buffalo†	mək	Kadu <i>mək</i> , cow.
Call	lu	—
Cat*†	mət/eksə	E. Naga <i>mashi</i> .
Cold	xəm	—
Dog*†	vi	Chin, <i>wi wi</i> .
Ear*†	nəpə	B. and Tib. <i>na</i> , Yawyin <i>napaw</i> , Sopvoma (Naga-Kuki) <i>nubbi</i> .
Earth (soil)	pəkə	—
Eat*†	sə	B. and Tib. <i>sa</i> , Kch. <i>sha</i> .
Elephant†	məki	Kch. <i>māgwi</i> , Kadu <i>akyi</i> .
Eye*†	pekkwe	—
Father*†	və, wə	Kch., E. Naga and Goro <i>wa</i> , Kadu <i>awa</i> .
Female... ..	nəm	Kch. <i>num</i> .
Fire*†	vè	Shan <i>fi</i> , Kachari <i>wui</i> , Kch. and Kadu <i>wan</i> .
Fish†	ətso	—
Flesh	hè	Shan <i>ha</i> .
Give*	nəm	—
Go*	hə	—
Gold*	xəm	Siyin and E. Naga <i>kham</i> , Shan <i>ka</i> , Chinese <i>kin</i> .
Good	kəmē	Shan <i>hkam</i> .
Grass	šēṇṇ	Kch. <i>tsing</i> .
Head*†	kəkə	M. <i>kok</i> , Tib. <i>go</i> .
Hill	kəṇṇrwe... ..	Kch. <i>kawng</i> , Tib. <i>ri</i> .

§ B. = Burmese. O.B. = Old Burmese. Tib. = Tibetan. Kch. = Kachin. E. Naga = Eastern Naga. M. = Meithei or Manipuri.

English.	Taman.	Compare. §
Hog†	va, wa	Kch. <i>wa</i> , B. <i>wet</i> , O.B. <i>wak</i> , Kadu <i>wag</i> .
Horse* †	tʃipòuk	Siyin <i>shipu</i> , Maring Naga <i>sapuk</i> , Kadu <i>sabu</i> .
House* †	ʃip	Tangkhu Naga <i>shim</i> .
I†	ně	B. <i>nga</i> .
Iron* †	ʃa	Tib. <i>chag</i> , Garo <i>ser</i> , Kadu <i>sin</i> .
Kill†	səsèuk	Kch. and O.B. <i>sat</i> .
Know	tʃùp	—
Man (human being)* †	mek	Tib., Shonshe Chin, and E. Naga <i>mi</i> .
Male	laktʃaj	—
Moon* †	sələ	Lushei <i>thla</i> , B. and Karen <i>la</i> , Kadu <i>sada</i> .
Mother* †	nēm	Kch. <i>mu</i> .
Name	təmeɲ	M. <i>ming</i> , Thādo (Chin) <i>min</i> .
Night†	nətaɲ	Kadu <i>natkycet</i> .
River†	(word for water used)	—
Road †	lam	B., Kadu, Tib., etc., <i>lam</i> .
Rock	təppə	—
Salt†	tsùm	Kch. <i>jum</i> , Kadu <i>sum</i> , M. <i>thum</i> .
Snake†	pə	Kadu <i>kəpu</i> .
Silk	nè	Shan <i>lai</i> or <i>nai</i> , Kch. <i>lai</i> .
Speak†	t'è	Atsi <i>dai</i> , B. <i>tè</i> (particle), Kadu <i>tutabank</i> .
Star* †	taɲpə	—
Steal	xələ	B. <i>kəv</i> .
Sun* †	pupek	Kadu <i>samət</i> .
Tooth* †	vəkòùn, wəkòùn	Garo <i>wagam</i> , E. Naga <i>va</i> , Kch. <i>wa</i> .
Water* †	tí—	Chin <i>ti</i> , <i>tui</i> , Garo and E. Naga <i>ti</i> , Karen <i>hti</i> , Tib. <i>ch'u</i> .
Write	rek	B. <i>yeʌ</i> , O.B. <i>rev</i> , Hindustani <i>likh</i> .
Year	kèɲ	Chin <i>kun</i> .

§ B. = Burmese. O.B. = Old Burmese. Tib. = Tibetan. Kch. = Kachin. E. Naga = Eastern Naga. M. = Meithei or Manipuri.

On the 25th August, 1910, I was present at one of the sacrificial feasts of the Taman community. It was held on a small hill near the left bank of the Nantaleik river about a mile from Twetwa, which lies at its mouth on the Chindwin. All the men from the Taman villages under the Pawmaing were there, and also a few Nagas.

On the hill was a large open shed, erected over a low square platform formed with four wooden beams.¹ The wood of these had the appearance of great age, and the first shed was said to have been erected in the same spot when the Tamans first settled near the river. There was then a village hard by, long since deserted. The platform was for the Pawmaing and his family. In the middle of it was a cane wicker stand, about a foot high and four feet wide, and circular, on which were placed some tumblers of rice-beer and some tea-salad.² Round this were hollow bamboos, also filled with rice-beer. On the south side of the shed, seated on an ancient block of wood, was the hereditary custodian of the god, an old man wearing the long white robe of Burmese ceremony.³ I shall call him the priest. By his side were some sheaves of young paddy. In front of him was another wicker stand, with more rice-beer and tea-leaves. Underneath this, I was told, was earth which had been brought all the way from China, and had accompanied the people in their wanderings. I was also shown a cannon-ball which was said to have been fired at them by the Chinese as they fled from their old home. A number of fowls were then produced, one cock and one hen for each village including the Naga villages. The cocks were held up in a row and slowly strangled between finger and thumb, while the priest offered prayers to the guardian spirit of the community for its prosperity, for good crops, and for freedom from sickness and war. As he did so, he poured rice-beer drop by drop on to the ground from a bamboo, just as water is poured out at Buddhist religious ceremonies. When the cocks were dead they were brought to the Pawmaing and their feet examined for omens. If the feet were separate, and hung symmetrically side by side, the omen was good, and meant general good luck for the village; if they were unsymmetrical, or the claws interlaced, it was bad. The same ritual was then gone through with the hens. They were specially connected with the crops, and their feet showed whether the crops would be good or bad. I regret to say that the Tamans are going to have very bad crops this year, while the Nagas, who work only hill-clearings, will get a good yield. A pig, bought for twenty rupees from the Nagas, was then brought and placed near the shed. The priest poured rice-beer on him, and a young man killed him with several blows on the head from a heavy club. He was cut open, and the blood caught in a bamboo and handed to the priest. The fowls were broiled, and the pig roasted over a wood fire. The thigh-bones of the fowls were then examined for more omens, these now depending on the symmetry of some small holes on each side of the bone. The priest then went outside, and smeared each man as he came up, and lastly himself, on the forehead and breast with blood from the bamboo,

¹ Plate XXXIX, Fig. 4.² Plate XXXIX, Fig. 1.³ Plate XXXIX, Figs. 1 and 3.



FIG. 1.



FIG. 2.



FIG. 3.

THE TAMANS OF THE UPPER CHINDWIN, BURMA.



FIG. 1.



FIG. 2.



FIG. 3.

THE TAMANS OF THE UPPER CHINDWIN, BURMA.



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.

THE TAMANS OF THE UPPER CHINDWIN, BURMA.



FIG. 1.



FIG. 2.



FIG. 3.



FIG. 4.

THE TAMANS OF THE UPPER CHINDWIN BURMA.

muttering prayers the while, as a protection against tigers and evil spirits. When the cooking operations were finished, pork, fowl, and rice were placed in bowls with chopsticks and set on the wicker stands, and the priest called on the god in a loud voice to come and eat. I was now told that there was nothing more to see except the feasting. Nothing could have been more orderly than the proceedings up to this point, but the rice-beer was being handed round freely, and I left the company to enjoy itself.

On a shelf under the roof in the south-east corner of the shed stood some helmet-shaped baskets of split bamboo, with pieces projecting from them like ears.¹ These, I was told, represented the heads of enemies slain in battle. The house of every Naga chief in unadministered territory is provided with a similar platform, on which are ranged the skulls of persons killed in raids or fights with other villages.

Description of Plates.

PLATE XXXVI.

Fig. 1.—A group of Tamans.

Fig. 2.—Group of Malins at Malin (25° 31' N., 95° 24' E.). The two old women in the foreground are the only persons who still use the Malin language.

Fig. 3.—Heinsun, near Naungmo, a Naga village, under the Tamanthi Pawmaing.

PLATE XXXVII.

Fig. 1.—Naga girl weaving at Heinsun.

Fig. 2.—Naga of Heinsun in full war equipment. (Helmet and shield from Mätong, in unadministered territory.)

Fig. 3.—Mashatweu, Naga headman of Naungmo, under the Tamanthi Pawmaing, whose wives and children were killed in the head-hunting raid by Nagas from unadministered territory in February, 1910.

PLATE XXXVIII.

Figs. 1 and 2.—An old Taman of Tamanthi, Chindwin River, now living at Yebawmi on the Uyu.

Figs. 3 and 4.—Maung Chein, Pawmaing of Tamanthi.

PLATE XXXIX.

Fig. 1.—In the sacrificial shed. In the foreground are bamboo cups for rice-beer on the table in the centre of the shed. The priest sits with his face to the south. On his right is another table for offerings, and in front of him are two sticks with fowl's feathers to mark the place where the earth from China is buried.

Fig. 2.—Bamboo basket-work representing human head.

Fig. 3.—The high priest of the Tamans.

Fig. 4.—One end of the sacrificial shed. The priest is on the right.

¹ Plate XXXIX., Fig. 2.

THE CORRELATION BETWEEN THE INTERORBITAL WIDTH AND THE OTHER MEASURES AND INDICES OF THE HUMAN SKULL.

BY FRANCIS H. S. KNOWLES, B.A., B.Sc.

FOR the purposes of this investigation into the correlation between the inter-orbital width and the other measures and indices of the human skull, I have made use of three separate series of crania—British, West African, and Eskimo.

No distinction has been made between the sexes, and though the British series is composed entirely of male crania, the African and Eskimo are composed of a mixture of male and female, the number of males predominating over that of the females in both cases. All the crania in these three series are selected adults, and this rule has been followed in the selection of specimens belonging to the various races to illustrate inter-racial correlation and to obtain inter-racial averages.

The British series, seventy-six in number, is composed of a mixture of English, Irish, and Scotch specimens. They form part of the Williamson collection of crania in the Royal Army Medical College, and are those of British soldiers.

The West African series, ninety-two in number, also belongs to the Williamson collection. This formed a very good group for the purpose in view, all the skulls being very much of one type, the majority of them having come from Ashanti.

The Eskimo series, sixty-eight in number, is composed of crania obtained from various collections—Williamson collection, University Museum of Oxford, Cambridge Anatomical Museum, and the collection at the Royal College of Surgeons.

The British series was chosen to represent the white races.

The West African to represent the black races.

The Eskimo were chosen, not because they represented any type, but because I had found that that race possessed the lowest average nasal capacity associated with the minimum average interorbital width. I therefore thought that an examination of the Correlation Tables obtained from the various measurements of their crania would be of importance.

In some few of the crania, owing to defects, etc., it was impossible to take certain measurements with the necessary degree of accuracy. These defective skulls were not included in Correlation Tables obtained from such measurements, and this will explain why, for instance, in the African series, there are only

eighty-two specimens to illustrate the correlation between fronto-orbital width and inter-zygomatic width, while in the same series there are eighty-nine specimens to illustrate the correlation between fronto-orbital width and intermalar width. For this reason at the head of each correlation table there has been placed the number of crania included in it, and in the tables showing the comparison between correlation coefficients obtained from corresponding Correlation Tables the same rule has been observed.

After the correlation between the interorbital width and the other measures and indices had been worked out through these three series, a number of other selected adult crania belonging to various races were measured in order to illustrate certain inter-racial correlations and to obtain inter-racial averages. This inter-racial investigation was undertaken in order to illustrate the inter-racial influences of frontal-diameter and nasal capacity on the interorbital width, and also the influences of nasal width on interdaeryonic and fronto-orbital width. The necessary measurements were obtained from crania belonging to various collections :—

- The Oxford Anatomical Department, University Museum.
- The Oxford University Museum.
- The Cambridge Anatomical Museum.
- The collection in the Royal College of Surgeons.
- The Williamson collection.

The races selected, the number of crania representing them respectively, are as follows :—

British	76	New Caledonians	21
Eskimo	73	New Britain	63
Chatham Islanders	64	Fijians	38
New Zealanders	84	Australians	202
Chinese	89	Tasmanians	38
Andamanese	37	West Africans	95
		Kafirs	86

INTERORBITAL WIDTH MEASUREMENT.

The measurement I have made use of as best expressing the minimum width between the orbits, is one taken across the minimum width between the internal angular processes of the frontal bone, from points overlying the slight margin or ridge which marks the confluence of the orbital and facial surface of these processes and which will be found in most cases to lie in line with the edge of the lacrymal crest of the lacrymal bone. I have called this the fronto-interorbital width measurement. The slight margins or ridges are usually fairly well defined, the angular processes in some cases displaying a slight edge on either side. On the whole, the minimum width across these internal angular processes forms a reliable point for measurement, and appears to me to have many advantages over other points that might be chosen to express the minimum width between the orbits.

In the first place it is their greater or lesser width that gives the appearance of greater or lesser width to the interval between the orbits; secondly, belonging as they do to the cranial portion of the skull, their width is usually measurable even when the more fragile facial portion, nasal bones, etc., be destroyed or defective; thirdly, it seems to be the most exact interorbital width measurement to use when making comparative measurements on the crania of the apes.

It might perhaps be thought that the width between the dacryons would form a good point from which to estimate the interorbital width, the width between these points being a fairly good measure of the minimum width between the orbits. (The dacryons are the points of confluence of the fronto-lacrymal, fronto-maxillary, and lacrymo-maxillary sutures on the interorbital walls.) On investigation, however, the fronto-orbital width measurement seemed to me the more reliable. In the first place the position of the dacryons seems to be liable to be influenced by variations; secondly, the nasal and lacrymal bones being fragile, are liable to be destroyed or partially defective, thus making it difficult to locate the dacryons with the necessary exactitude; and thirdly, in making comparative measurements on the crania of the anthropoid apes, the interdacryonic width does not always correspond to the exact measure of the minimum width between the orbits, the fronto-interorbital width measure being the more correct. Below are the results obtained from Correlation Tables to show the comparison between the interdacryonic width and fronto-interorbital width in their relation to other measurements.

		Correlation coefficient and probable error of c.c.
Correlation between fronto-inter-orbital width and interdacryonic width.	95 West Africans	+ '846 ± '0197

	Correlation between fronto-interorbital width and minimum frontal diameter.	Correlation between interdacryonic width and minimum frontal diameter.
95 West Africans	+ '6129 ± '0432	+ '5318 ± '0496
76 British	+ '6548 ± '0442	+ '5605 ± '0531
	Between fronto-interorbital width and nasal height.	Interdacryonic width and nasal height.
95 West Africans	+ '3795 ± '0592	+ '2552 ± '0647
	Between fronto-interorbital width and orbital width.	Interdacryonic width and orbital width.
92 West Africans	+ '3246 ± '0629	+ '0827 ± '0698

	Fronto-interorbital width and intermalar width.		Interdacryonic width and intermalar width.	
	+	±	+	±
89 West Africans	·6865	·0378	·6418	·042
	Fronto-interorbital width and naso-alveolar length.		Interdacryonic width and naso-alveolar length.	
	+	±	+	±
92 West Africans	·3389	·0623	·2407	·0662

From the above tables it appears that the fronto-interorbital width measurement displays greater correlation than the interdacryonic width, with other measurements of the cranium. An occasional exception to this, however, is formed by the measurement of the nasal width, for when comparing the correlations between this measurement and that of the fronto-interorbital width and interdacryonic width, in certain series of crania the correlation between the interdacryonic width and nasal width is greater than that between fronto-interorbital width and nasal width. From the position of the dacryons, it might have been thought that the interdacryonic width would generally be more liable than the fronto-interorbital width to the influence of the greater or lesser width of the nasal aperture. This conclusion is not, however, fully supported from the evidence obtainable from the various series of crania, the results being found to be conflicting.

For whereas the Eskimo, Afghans, Chinese, Andamanese, Fijians, Chatham Islanders, West Africans, and Kafirs displayed the greater correlation between interdacryonic width and nasal width, in the British, New Zealanders, New Caledonians, New Britains, Australians, and Tasmanians the reverse was found to be the case, the correlation between fronto-interorbital width and nasal width being greater than that between interdacryonic width and nasal width.

	Correlation between fronto-interorbital width and nasal width.	Correlation between interdacryonic width and nasal width.
73 Eskimo	+ ·3112 ± ·0713	+ ·3315 ± ·0703
76 British... ..	+ ·3099 ± ·07	+ ·2862 ± ·071
64 Chatham Islanders	+ ·297 ± ·0685	+ ·2862 ± ·0774
84 New Zealanders	+ ·5695 ± ·0497	+ ·2994 ± ·067
89 Chinese	+ ·4133 ± ·0593	+ ·4915 ± ·0542
37 Andamanese	+ ·4113 ± ·0921	+ ·4855 ± ·0847
21 New Caledonians	+ ·3428 ± ·1299	+ ·3391 ± ·1302

	Correlation between fronto-interorbital width and nasal width.	Correlation between inter-dacryonic width and nasal width.
63 New Britain	+ .4859 ± .0649	+ .4372 ± .0687
38 Fijians	+ .1269 ± .1077	+ .2396 ± .1031
202 Australians	+ .3157 ± .0427	+ .2124 ± .0453
38 Tasmanians	+ .3625 ± .095	+ .2381 ± .1032
95 West Africans	+ .4861 ± .0529	+ .5311 ± .0497
86 Kafirs	+ .3941 ± .0614	+ .6601 ± .0411

From the results of these comparative tables and from the reasons that I have given before, the fronto-interorbital width measurement seemed to me to be the most satisfactory measurement by which to express the interorbital width. I have therefore drawn up a series of graphs to display the correlation first between the fronto-interorbital width and the other measures and indices of the skulls in the three groups selected, and later between that measurement and certain other selected measurements through a series of crania belonging to various races. These graphs have then been worked out mathematically and a series of coefficients of the correlation obtained which express by a numerical figure the greater or lesser degrees of positive or negative correlation found in the various graphs. (An explanation of the principles of correlation is provided in chapter 5 of W. Palin Elderton and Ethel M. Elderton's *Primer of Statistics*.) As a short explanation for the purposes of this paper, may be extracted from that chapter the following:—"Whenever a fixed connection always holds between two variables, as, for instance, if a breadth of a skull was always exactly half that of its length, then we can say that they are absolutely related, or in more technical language that the correlation is perfect; unity being used to represent this perfect correlation.

"If again one variable is about twice as great as another, but sometimes is a little more, sometimes a little less, then the relationship between the two is nearly but not quite absolute. In this case a value is required on the scale a little below that which has been used to express perfect correlation.

"In those cases where there is no correlation whatever between two variables, the coefficient of correlation is zero.

"If on the other hand it is found that, for example, whenever one variable was long another was narrow and whenever the one was short the other was broad, we should have a relationship between length and 'narrowness.' But remembering that 'narrowness' is only breadth from the opposite point of view, the scale is merely extended backwards to -1 , and so we have a scale of coefficients of correlation running from -1 to $+1$."

CORRELATION BETWEEN CRANIAL MEASUREMENTS.

		Corr. Coeff.	Prob. error of Corr. Coeff.
Correlation between minimum frontal diameter and glabello-occipital length.	92 West Africans 74 British... 67 Eskimo...	+ .4917 + .4001 + .4604	± .0534 ± .0638 ± .065
Correlation between minimum frontal diameters and greatest breadths	92 West Africans 74 British... 65 Eskimo...	+ .5509 + .4621 + .5243	± .049 ± .0616 ± .0606
Correlation between basi-bregmatic heights and glabello-occipital lengths.	92 West Africans 72 British... 67 Eskimo...	+ .5395 + .461 + .5646	± .0499 ± .0626 ± .0561
Correlation between basi-bregmatic heights and greatest breadths.	92 West Africans 72 British... 67 Eskimo...	+ .3561 + .1982 + .3354	± .0614 ± .0764 ± .0748
Correlation between nasal heights and glabello-occipital lengths.	92 West Africans	+ .6373	± .0418
Correlation between nasal heights and naso-occipital lengths.	92 West Africans 74 British... 67 Eskimo...	+ .6406 + .3035 + .3576	± .0415 ± .0712 ± .0718

CORRELATION BETWEEN FRONTO-INTERORBITAL WIDTH AND CRANIAL MEASUREMENTS AND INDICES.

		Corr. Coeff.	Prob. Error of Corr. Coeff.
Correlation between fronto-inter-orbital width and minimum frontal diameter.	95 West Africans 76 British... 73 Eskimo...	+ .6129 + .6548 + .617	± .0432 ± .0442 ± .0489
Correlation between fronto-inter-orbital width and greatest breadth.	92 West Africans 74 British... 65 Eskimo...	+ .389 + .4336 + .4038	± .0597 ± .0637 ± .07
Correlation between fronto-inter-orbital width and basi-bregmatic heights.	92 West Africans	+ .294 + .1972 + .3202	± .0642 ± .0764 ± .0739
Correlation between fronto-inter-orbital width and glabello-occipital lengths.	92 West Africans 74 British... 67 Eskimo...	+ .5414 + .3476 + .2862	± .0497 ± .069 ± .0757
Correlation between fronto-inter-orbital width and naso-occipital lengths.	92 West Africans 74 British... 67 Eskimo...	+ .537 + .3485 + .2477	± .05 ± .0689 ± .0774

CRANIAL INDICES.

Correlation between fronto-inter-orbital width and cephalic indices.	92 West Africans	— .1394	± .0689
	74 British ...	+ .0679	± .078
	64 Eskimo ...	+ .1273	± .0829
Correlation between fronto-inter-orbital width and vertical indices.	92 West Africans	+ .1956	± .0677
Correlation between fronto-inter-orbital width and cranial capacity.	73 West Africans	+ .2454	± .0742
	73 British ...	+ .1892	± .0762

The correlations between the cranial measurements in their relation to one another have been examined, since it was thought possible that their various degrees of correlation with one another might be of help in explaining correlations appearing between those measurements and the interorbital width. In the above tables the various coefficients of correlation found in the three series of crania are grouped together for purposes of comparison. In the actual explanation of the correlation it was found to be "handier" to take the average between the three coefficients in each group, always noting, however, any marked differences that might exist among the series constituting that group.

In the three series of crania, fairly strong correlation is shown to exist between cranial length and cranial height and between minimum frontal diameter and cranial breadth, an average correlation coefficient of +.52 for the first two and +.51 for the second.

Between the minimum frontal diameter and cranial length the correlation is slighter, the average correlation coefficient being +.44. While between cranial height, as expressed by the basi-bregmatic height measurement, and cranial breadth the correlation is quite small: +.29 being the average correlation coefficient obtained.

Turning to the correlation between the fronto-interorbital width and the cranial measurements, the strongest average degree of correlation found is that between the fronto-interorbital width and the minimum frontal diameter, an average correlation coefficient of +.61 being obtained.

The next in value is its correlation with the cranial breadth, +.4 being the average correlation coefficient, but here there is a difference exhibited between the three series, for in the West African the correlation between fronto-interorbital width and cranial length is higher than that between fronto-interorbital width and cranial breadth; this, however, will be dealt with later.

Between the fronto-interorbital width and glabella-occipital length an average correlation coefficient of +.39 is found, the coefficient derived from its correlation with the naso-occipital length being very slightly lower, the average correlation coefficient being +.38. The lowest average degree of correlation displayed is that

between the fronto-interorbital width and the basi-bregmatic height, the average correlation coefficient being only $+ \cdot 27$.

CORRELATION BETWEEN INTERORBITAL WIDTH AND THE CRANIAL MEASUREMENTS AND INDICES.

From the foregoing Correlation Tables it would appear that of the four cranial measurements selected, that of frontal diameter has the most influence on the width between the orbits. This influence becomes very apparent on an examination of any series of crania that belong to one type, large frontal diameter being almost invariably accompanied by large interorbital width. Now increase in frontal width, in the race at any rate, would seem to be primarily due to increase in frontal development, so that this being the case, we should rather expect to find some evidence of a correlation between interorbital width and frontal development, frontal development being the primary cause for the correlation between interorbital width and frontal breadth. That this holds good in the race as a whole seems to be evident from an examination of crania belonging to various types; it may be noticed, *e.g.*, in the case of the Australian race, that although that race possesses a very large average nasal capacity (the influence of which as will be seen later is of primary importance in determining the general racial extent of the interorbital width), yet their average interorbital width is on the whole rather narrow, especially when compared with the same measurement in the West African series, considering that both races possess very similar values for their nasal measurements. When, however, the respective frontal development of these two races are compared, it is at once evident that the Australian is much inferior to the negro in this respect, the former displaying a low, retreating, and poorly developed forehead, the latter a higher and more prominent one. This inferiority on the part of the Australian would therefore provide a good explanation for the lesser extent of their interorbital width. When, however, an attempt is made to determine the correlation between interorbital width and frontal development in the individual, there seems to be other factors which tend to modify or obscure it and to render it on the whole not so very evident. Of these the influence of frontal breadth is the most important, for it is often the case that an individual may possess a broad yet low and retreating forehead, while a second individual belonging to the same race may possess a narrower yet higher and much better developed forehead. For all that, the interorbital width of the former, owing to the influence of frontal breadth, will in most cases be greater than that of the latter. Still if it were possible to compare a number of crania belonging to one type all of them about the same general size and having corresponding frontal breadths, I think it would be probably found to be the case that those which possessed the higher degree of frontal development would possess also a higher average interorbital width.

Taking the average of the three groups, breadth of head comes next in value of correlation, the correlation between head length and interorbital width being

slightly lower. It would certainly have been expected that the correlation between the two breadth measurements, interorbital width and cranial breadth, would in all cases have been the greater; but when the series is examined the African group are seen to form an exception to this which one would have expected to find a general rule. In that group the correlation between head length and interorbital width is of higher value than that between head breadth and interorbital width; a possible explanation of this difference might perhaps be afforded by the strong correlation shown in that series between frontal diameter and cranial length, and between nasal height and cranial length, for both frontal diameter and nasal height are also correlated with interorbital width. Since, however, two out of the three groups show a greater correlation between head breadth and interorbital width than between head length and interorbital width, and since it also seems more probable that the breadth measurement should tend to exhibit a higher degree of correlation than the length measurement, it would seem likely that this would be found to be the general rule, and that the African group examined form an exception owing to the exceptional influences noted above. The final cranial measurement whose correlation with the interorbital width has been examined is that of the basibregmatic height. At the outset it did not seem likely that any strong degree of correlation would be found between these two measurements, and this conclusion was borne out by the low value for the resulting coefficient of the correlation; it would therefore seem as though any correlation between these two measurements should be considered rather as proportionate than absolute, and possibly due in part to the influence of cranial length, for cranial length displays a certain amount of correlation both with cranial height and with interorbital width. The Eskimo group afford some support to this latter view, for in that series the highest value of correlation between cranial length and cranial height is also associated with the highest value of correlation between interorbital width and cranial height. When the various degrees of correlation between interorbital width and head length, breadth, and height are taken into consideration, there would appear to be a strong presumption in favour of finding a high degree of correlation between interorbital width and cranial capacity, that is to say, that an increase in cranial capacity should be accompanied by an absolute increase in the width between the orbits. When, however, the series was examined, although indeed a positive correlation was found between these two measurements—correlation coefficient $+0.2454$ in the African and $+0.1892$ in the British—yet the value of these coefficients was not high enough to be of much importance. A higher degree of correlation should have been found in order to make quite certain that this correlation was not rather due to the natural proportionate relation between the measurement of cranial capacity and that of interorbital width. On the whole it seems probable that frontal breadth and frontal capacity are of such primary importance in their influence on the interorbital width that they would tend to modify and obscure any relation between interorbital width and the cranial capacity as a whole. On a careful examination of any series of crania it may often be found that one skull will

possess a narrow restricted forehead, while posteriorly the cranium may expand very considerably, giving a high value to the cranial capacity; a second, on the other hand, will display a broad forehead while posteriorly the cranium may be restricted and of much smaller capacity than the first; owing, however, to this breadth of forehead in the latter the measurement of its interorbital width will probably be rather larger than the same measurement in the former. When this principle, therefore, is applied to a large series of crania it is at once apparent that any correlation between interorbital width and cranial capacity will tend on the whole to be rather a proportionate one than otherwise. (It must, however, be always remembered that in making these comparisons it is necessary to select skulls belonging to the same race, owing, as will later be pointed out, to the influence of nasal capacity on the width between the orbits.)

Before the correlation between the interorbital width and the cranial indices, cephalic and vertical, is examined, it is necessary to remark that such a comparison is of necessity limited by the differences between an absolute measurement, such as is the measure of the interorbital width, and the merely relative or proportionate figure of an index; since an index is a method for conveniently expressing the relative proportions between two measurements, and does not take into account the actual size of the measurements themselves. Bearing this in mind we should expect to find, in working out the correlation between the interorbital width and any index based on the relative proportions of two other measurements, that that measurement of those two which possessed the stronger influence on the interorbital width measurement would influence in its direction any correlation between the index and the interorbital width. To give an example which will perhaps make it clearer: If we are taking the correlation between interorbital width and that cephalic index in any series of crania wherein the influence of head breadth is greater than that of head length on interorbital width, we should expect to find a positive correlation exhibited between interorbital width and cephalic index—in other words, that the more brachycephalic the skull of that series the greater the width between the orbits; and *vice versa*, should the influences of head length be the greater that a negative correlation would be found, and that in that case the more dolichocephalic the skull the greater the interorbital width. Added to this, we could never, I think, expect to find any very high degree of correlation of either kind owing to the fact mentioned before, that we are in these cases comparing a relative figure with an absolute measurement, but that it will merely serve to point out the direction indicated already by the relative degrees of correlation shown between the two measurements forming the index and the interorbital width. These conclusions seem to be borne out by the results of an examination into the correlation between interorbital width and the cranial indices in these three series of crania.

Taking first the correlation between the interorbital width and the cephalic index, we find that in the West African series, where, as we have already seen, head length possessed a higher degree of influence than head breadth on inter-

orbital width, a slight degree of negative correlation is displayed between interorbital width and cephalic index, that is to say, in that series the more dolichocephalic skull tends to be associated with a slightly greater interorbital width. In the British and Eskimo series on the contrary, where the influence of head breadth is the greater, there is a tendency to a slight degree of positive correlation indicating that in those two series the more brachycephalic skull tends to be associated with the greater degree of interorbital width. Again in the West African series, where head length possessed a higher degree of influence than head height on interorbital width, a slight degree of negative correlation is displayed between interorbital width and the vertical index, that is to say, that in the West African series the slightly longer the skull in proportion to its height the greater is its tendency to be associated with an increase in interorbital width.

CORRELATION BETWEEN THE FRONTO-INTERORBITAL WIDTH AND THE
FACIAL MEASUREMENTS AND INDICES.

		Corr. Coeff.	Prob. Error.
Correlation between fronto-inter-orbital width and nasal width.	95 West Africans	+ .4861	± .0529
	76 British ...	+ .3099	± .07
	68 Eskimo ...	+ .345	± .072
Correlation between fronto-inter-orbital width and nasal height.	95 West Africans	+ .3795	± .0592
	76 British ...	+ .166	± .0752
	66 Eskimo ...	+ .4474	± .0654
Correlation between fronto-inter-orbital width and nasal indices.	95 West Africans	+ .1516	± .0676
	76 British ...	+ .1759	± .075
	68 Eskimo ...	- .106	± .0809
Correlation between fronto-inter-orbital width and orbital width.	92 West Africans	+ .3246	± .0629
	76 British ...	+ .1792	± .0749
	68 Eskimo ...	+ .4588	± .0645
Correlation between fronto-inter-orbital width and orbital heights.	92 West Africans	- .0295	± .0703
	76 British ...	+ .1489	± .0757
	68 Eskimo ...	+ .1969	± .0786
Correlation between fronto-inter-orbital width and orbital indices.	92 West Africans	- .2486	± .066
	76 British ...	+ .0057	± .0774
	68 Eskimo ...	+ .2568	± .0764
Correlation between fronto-inter-orbital width and inter-fronto-malar width.	95 West Africans	+ .7797	± .0271
	76 British ...	+ .6845	± .0411
	67 Eskimo ...	+ .7412	± .0371
Correlation between fronto-inter-orbital width and interzygomatic breadth.	82 West Africans	+ .6674	± .0413
	76 British ...	+ .4311	± .063
	56 Eskimo ...	+ .5967	± .058
Correlation between fronto-inter-orbital width and intermalar width.	89 West Africans	+ .6865	± .0378
	76 British ...	+ .4886	± .0589
	56 Eskimo ...	+ .6802	± .0484
Correlation between fronto-inter-orbital width and naso-alveolar length.	92 West Africans	+ .3389	± .0623
	76 British ...	+ .1474	± .0757
	67 Eskimo ...	+ .3142	± .0743

		Corr. Coeff.	Prob. Error.
Correlation between fronto-inter-orbital width and facial indices. }	82 West Africans	- .2307	± .0706
Correlation between fronto-inter-orbital width and basi-nasal length. {	92 West Africans	+ .4089	± .0585
	74 British ...	+ .4028	± .0657
	66 Eskimo ...	+ .5259	± .06
Correlation between fronto-inter-orbital width and basi-alveolar length. {	92 West Africans	+ .2846	± .0646
	74 British ...	+ .324	± .0701
	66 Eskimo ...	+ .3843	± .0708
Correlation between fronto-inter-orbital width and gnathic or alveolar indices. }	92 West Africans	- .1402	± .0689
Correlation between fronto-inter-orbital width and palato-maxillary breadth. {	91 West Africans	+ .5364	± .0504
	74 British... ...	+ .1201	± .0773
	60 Eskimo ...	+ .5002	± .0653
Correlation between nasal widths and palato-maxillary breadth. {	91 West Africans	+ .5081	± .0525
	74 British... ...	+ .1392	± .0769
	60 Eskimo ...	+ .503	± .065
Correlation between fronto-inter-orbital width and palato-maxillary length. {	91 West Africans	+ .2716	± .0655
	74 British... ...	+ .2629	± .073
	60 Eskimo ...	+ .3319	± .0775
Correlation between nasal height and palato-maxillary length. {	91 West Africans	+ .4866	± .054
	74 British... ...	+ .1961	± .0754
	60 Eskimo ...	+ .3901	± .0738

CORRELATION BETWEEN THE FRONTO-INTERORBITAL WIDTH AND THE NASAL MEASUREMENTS AND INDEX.

The fronto-interorbital width displays a certain amount of correlation with the nasal width, the average correlation coefficient obtained from the West African, British, and Eskimo series being +.38. Of the three the highest value for this correlation was that found in the West African series, the correlation coefficient being +.4861. The average correlation coefficient obtained from the correlation between fronto-interorbital width and nasal height was very slightly less; indeed, in the Eskimo series the correlation between fronto-interorbital width and nasal height was higher than that between fronto-interorbital width and nasal width, the correlation coefficient for the former being +.4474 as compared with the correlation coefficient for the latter of +.345. If then we take into consideration the combined influences of these two measurements, nasal width and nasal height, on interorbital width, we would seem to be led to the conclusion that there must be some degree of correlation between interorbital width and the nasal capacity, and that the larger and more capacious the nose the greater the width between the orbits, and this, regardless of the question as to which of the two measurements, nasal width or nasal height, possesses the most influence on the interorbital width. In order, therefore, to determine the value of this influence of nasal capacity in its relation to interorbital width, it will now be necessary to examine the respective

measurements of nasal width and nasal height, and to endeavour to determine which of the two would seem to have the greater influence on nasal capacity, so that by so doing we may hope to arrive at some conclusion as to the respective value of their influences in their relation to the width between the orbits. Now the nasal width measurement is the measure of the maximum width of the nasal aperture, and on examination this will be found to coincide with the measure of the maximum width of the anterior opening of the inferior nasal meatus, that is, the width across the nasal respiratory channels as bounded above by the inferior turbinated bones and below by the nasal floor; but while in the individual, great variations in the extent of this width alone would not seem to be of very marked or frequent occurrence, that is to say, that increase in this width would tend in general to be associated also with a proportionate increase in the extent of the other meati and the nasal height itself; when, on the other hand, we examine the cranium of an individual belonging to a leptorrhine race, and compare it with the cranium of a platyrrhine type, we are at once struck by the fact that it is just the greater extent of the measurement across the nasal respiratory channels in the platyrrhine skull that gives the appearance of large nasal capacity to that type, the extent of the middle and superior meati and the nasal height being of little or no value in this respect. It is now, too, that another very important fact becomes evident, for it is just this increase in the race of the extent of the inferior meatus, causing as it does an increase in nasal capacity, that seems to be accompanied by a corresponding increase in the average extent of the width between the orbits. We now have the Eskimo skull with a very contracted and small sized inferior meatus associated with a very small interorbital width contrasted with the West African negro displaying a wide free and open inferior meatus associated with a very large interorbital width: it is then, also, that we can see the small importance in the race of nasal height as regards its influence on the nasal capacity, for from an examination of the respective sizes of the inferior meati of the Eskimo and African, it is at once evident that the nasal capacity of the negro is in proportion far greater than that of the Eskimo; if, on the other hand, we compare their nasal heights, that of the Eskimo is in proportion far greater than that of the negro; so that if we were to take into consideration their height as well as their width, and attach as much value to the one as to the other in endeavouring to estimate their respective nasal capacities, in so far at any rate as the latter influences the interorbital width, we should be very probably led into inferring that the nasal capacities of the two were of very nearly equal value. Again, judging from cranial factors alone, we should have expected that the Eskimo would have displayed a much greater average interorbital width than that of the negro, for the Eskimo possess a slightly broader forehead and far more capacious crania; but these considerations seem, for all that, to be quite outweighed by this influence of the nasal capacity. All these facts then will serve to illustrate the primary importance in the race of the extent of the inferior nasal meatus in the determination of the extent of the width between the orbits, and although in

certain instances it seems probable that this facial influence may possibly tend to be modified by the counter influences of cranial factors, yet on the whole we seem to find it, throughout a large series of various races, to be of very consistent value. When we return to our examination of the individual, I think it will be evident, that although the influence of the extent of the inferior nasal meatus will tend in general to possess the more important influence on the interorbital width, yet for reasons of proportion alone, the extent of the middle and superior meati and nasal height itself would also have to be taken into consideration, so that in this case, size and capacity of the nose as a whole, and not the extent of the inferior meatus alone, would influence the interorbital width, albeit in the race it is just that extent of the inferior meatus that seems to be of primary, if not of sole, importance in this respect; furthermore, that since the general average racial extent of the nasal respiratory channels seems to be due, on the whole, to the influence of physical environment, we should, I think, expect to find that its general average size would in the individual be rather determined by the general average size as possessed by the race to which that individual belonged. I have therefore come to the conclusion, that in the individual, the general extent of the interorbital width would, in proportion to the size of the skull, be governed by the general average extent of that measurement as determined in the race as a whole by the influence of nasal capacity, while variations in the extent of the interorbital width would be due more largely to variations in cranial factors, of which that of frontal breadth seems to be of most importance; on the other hand, that the correlation between nasal capacity as a whole and interorbital width would always tend in the individual to be rather a proportionate one, although, bearing in mind always the primary importance of the extent of the inferior meatus, we should expect that any individual variations in this respect would always possess a strong influence on the interorbital width, so that we should in all probability find it the general rule that the degree of correlation between interorbital width and nasal width would be of greater value than that between the interorbital width and any other nasal measurement. Now, as I have already pointed out, the measurement of the nasal width corresponds very closely to the maximum width across the inferior meatus; but comparing those races that display large and capacious inferior meati with others that possess those of small size, it will be noticed that there is a difference in the form of nasal opening associated also with a difference in the levels at which the nasal width is usually found; for amongst the platyrrhine races, that is to say, those races which display large nasal capacities, the common shape of the nasal aperture is inclined to be pyriform, the lower border of the nasal opening and the anterior nasal spine are not so marked, while the anterior nasal walls seem to descend, as it were, to a lower level on the alveolar border of the superior maxillary bones, associated, as Professor Macalister has pointed out, with the prognathic and macrodont condition of the jaws. (*Journ. Anat. and Phys.*, vol. 32, p. 223.) This seems to allow of a greater expansion for the anterior

opening of the inferior nasal meatus; at the same time, for this reason, the level of the maximum nasal width tends to fall and to be found close down between the inferior angles of the nasal opening, corresponding rather to the measure across the middle or lower half of the inferior nasal meatus. In the leptorrhine races, on the other hand, which possess more restricted nasal capacities, the form of nasal aperture is much more elongated and ovoid, and the nasal spine tends to become more marked and, with the better marked borders of the nasal aperture, close in, as it were, the lower portion of the nasal opening, in this way seeming to restrict the anterior opening of the inferior nasal meatus; at the same time, the level of the maximum nasal width tends to rise a little and to be rather closely approximated to the width of the inferior nasal meatus at, or not very far below, the level of the inferior turbinated bones. It is therefore possible that these differences may be due to the slightly higher degree of correlation between nasal width and interorbital width that seems on the whole to be found in those races tending to greater nasal capacities and more pyriform nasal apertures, as compared with those races displaying a more restricted nasal capacity and a more elongated nasal form. This difference in the values of their respective correlation coefficients may be seen on an examination of the table of correlation coefficients that I have drawn up earlier in this paper, when comparing the correlation between fronto-orbital width and nasal width and that between interdaeryonic width and nasal width. With regard now to the influence of the nasal height measurement on the interorbital width: in the individual, although for reasons of proportion it would have to be taken into account in estimating the correlation between the nasal capacity and the interorbital width, still I think, for the reasons I have given above, that it would very seldom show so high a degree of correlation as would the nasal width with the interorbital width; apart even from the importance of the width of the inferior meatus, the nasal height would seem to be limited in its value as a guide to nasal capacity owing to variations in the level at which the nasal bones articulate with frontal bone, for these variations may either limit or cause an excess in the nasal height without affecting the general nasal capacity. Inter-racially, too, the nasal bones seem to articulate at a higher level in the leptorrhine than in the platyrrhine races, for in the latter they seem in general to articulate at a level that is rather more in a line with the upper level of the fronto-maxillary sutures, while in the former they articulate well above those sutures; this difference in the levels would tend to cause a limitation to the nasal height of the platyrrhine races without lessening in any way their nasal capacities. To sum up then, in the individual the nasal capacity as a whole seems to be correlated to a certain extent with the interorbital width, although as a general rule the nasal width would tend to show a higher degree of correlation with the interorbital width than would any of the other nasal measurements; at the same time, the influence of this facial factor of nasal capacity seems quite subservient to the influences of cranial factors. In the race, on the other hand, the reverse seems to be the case, and we now find as a general rule that those races possessing

larger and wider nasal respiratory channels possess also a greater interorbital width, and although of course, if a close examination be made of a large series of races, it will be found that cranial influences may indeed tend to modify in certain instances the influences of nasal capacity, yet as a general rule this influence of nasal capacity on the interorbital width will be seen to possess a very constant value.

As regards the correlation between the interorbital width and the nasal index, seeing that this index is based on the proportion of the width of the nose to its height, that is to say, the broader the nose in proportion to its height the greater the index, while the narrower the nose in proportion to its height the smaller the index, and bearing in mind also that it would seem likely to be generally the case that the value of the degree of correlation between nasal width and interorbital width is greater than that between nasal height and interorbital width, we should expect to find a positive degree of correlation displayed between the interorbital width and the nasal index; in other words, that the more platyrrhine nasal form would tend in general to be associated with a greater degree of interorbital width, subject to the exception that in any series wherein the influence of nasal height was greater than that of nasal width, the reverse would take place and the correlation between nasal index and interorbital width be of negative value. These conclusions are borne out by the three series of crania under examination. The African and British, in which the influence of nasal width was the greater, display a slight degree of positive correlation between interorbital width and nasal index. The Eskimo series, in which the influence of nasal height was superior to that of nasal width, exhibit negative correlation between interorbital width and nasal index. Now in the case of a comparison between individuals belonging to the same race, I do not consider the nasal index as of much value as a guide to their respective nasal capacities, owing to the limitations which must be evident in any comparison between an absolute measurement and a relative value; but when this index is applied inter- racially, we might then admit a certain value to it for our present purpose, for we then find that in general those races which possess the higher values for their average nasal index possess also the larger nasal capacities, while races possessing lower average nasal indices possess also smaller average nasal capacities. Still when instituting any inter-racial comparison between the average nasal indices and average interorbital widths, any correlation between the two can only be considered as expressing the general trend and must not be taken at all too literally on account of the reasons given above.

CORRELATION BETWEEN THE FRONTO-INTERORBITAL WIDTH AND THE ORBITAL MEASUREMENTS AND INDEX.

Between the fronto-interorbital width and the orbital width there is an average correlation coefficient in the three series of crania of $+ \cdot 32$, while between the fronto-interorbital width and orbital height there is little or no correlation shown at all: in the African the correlation coefficient being $- \cdot 0295 \pm \cdot 0703$, in the British and Eskimo $+ \cdot 1489 \pm \cdot 0757$ and $+ \cdot 1969 \pm \cdot 0786$ respectively. From

this it would appear that while the width between the orbits has some slight influence on the width of the orbits themselves, on the height of the orbits it has no effect whatever, any correlation found between those two measurements being only proportionate. Now the orbital index is based on the proportion of the orbital height to the orbital width, so that the higher the value of the index the more nearly equal these two measurements and the more megaseme the orbital form, while on the other hand the greater the orbital width in proportion to the height (or looking at it from the other point of view, the lower the height in proportion to the width), the lower the value of the index and the correspondingly more microseme the orbital form. Since, therefore, interorbital width appears to have more influence on orbital width than on orbital height, we should expect to find a negative correlation between interorbital width and the orbital index, and that in general, increase in interorbital width would tend to be associated with a more microseme form of orbit; turning to the three series of crania we find that, in the main, this is the case; the African and Eskimo series displaying a negative correlation between fronto-orbital width and the orbital index $-.2486 \pm .066$ for the first and $-.2568 \pm .0764$ for the second. In the British group the correlation, though positive, is too slight to be of any value, while, as has been seen from the correlation tables, in that series the correlation between fronto-orbital width and orbital width is very small, being very little higher in value indeed than the correlation in the same group between fronto-orbital width and orbital height: it is possible that this difference in the British group may be due to the rather mixed types which form that series. On the whole it seems probable that in any series of crania of one type, increase in interorbital width would tend to be associated with a slight increase in the orbital width, but without a corresponding increase in the orbital height, so that, in general, the greater the interorbital width, the more microseme the orbital form. I do not think that this influence of interorbital width on the orbital form would be very apparent when applied inter-racially; there are too many other factors at work also; still I have taken the averages for the interorbital width and the orbital index through these three series of crania under examination, and it is true that the Eskimo series with the lowest average interorbital width is associated also with the most megaseme orbital form, while the West Africans with the highest average interorbital width possess also the most microseme form of orbits; the British series being intermediate in both respects.

	Average fronto-inter-orbital width.	Average orbital index.
92 West Africans	27.5 mm.	86.69
76 British	26.5 mm.	87.79
68 Eskimos	22.5 mm.	89.25

I should be inclined to hesitate, for all that, before accepting this difference as of very much value, as the difference between the average for the orbital index of the West African and Eskimo series does not appear to be so large as might have been expected considering the difference between their respective average interorbital widths.

A probable explanation of this correlation between interorbital width and orbital width might perhaps be afforded by a reference to the correlation between the width of the orbits and the width of the whole facial skeleton. Where we have a cranial type displaying a broad nasal aperture, great facial breadth and great development of the upper and lower jaws with the associated forward thrust of the face, we usually find also a microseme orbital form, the width of the orbits having been increased with often an apparent decrease in their height. In this type the broad nose would tend to be associated also with an increase in the interorbital width, so that we should thus tend to find the broad interorbital width associated also with the microseme form of orbits. The antithesis of this broad-faced type would be the pronouncedly leptorrhine facial form with the small jaws, narrow nose and long face: here the narrowing of the face would seem to restrict as it were the orbital width while also tending to give rise to an increase in the orbital height, thus displaying the typical megaseme orbital form, and here also, owing to the influence of the narrow nasal aperture, would be found displayed a narrower interorbital width. Owing, however, to the cranial influence of frontal breadth and frontal capacity tending to modify the influence of nasal capacity on interorbital width, we should expect to find variations that would render the foregoing associations not always very evident, thus making it necessary to regard this rather as a generalised than an absolute conclusion. Applying the same principle to the case of individual crania we might then expect to find evidence that individual broadening of the face associated with a broadening of the nasal aperture and corresponding increase in the interorbital width would tend to be associated also with a more microseme orbital form, so that in a large series we would expect to find a certain degree of correlation between interorbital width and the orbital width itself—without any correlation beyond what was proportionate between the interorbital width and the orbital height. For these reasons there would also appear a positive correlation between interorbital width and the orbital index, the more microseme orbital form tending to be associated with the greater interorbital width.

CORRELATION BETWEEN FRONTO-INTERORBITAL WIDTH AND INTER-FRONTO-MALAR WIDTH.

The correlation between the fronto-interorbital width and inter-fronto-malar width is high, the average correlation coefficient being + .73. This was to be expected, seeing that the fronto-interorbital width measurement forms a part, as it were, of the measurement between the fronto-malar sutures. Increase in the width of the one would therefore be in general associated with increase in the width of the other.

The inter-fronto-malar width measurement is one taken between the fronto-malar sutures situated on either side of the upper margin of the outer orbital walls. This measurement when compared with that of the minimum frontal diameter is of use as expressing the greater or lesser orbito-facial development of a skull as compared with its frontal development.

A great excess of orbito-facial as compared with frontal development can be very clearly seen in the skulls of the anthropoid apes.

	Minimum Frontal diameter.	Inter-fronto-malar width.
1 Gorilla (male)	75 mm.	117 mm.
1 Orang-outang (male) ...	61·5 mm.	92 mm.
1 Chimpanzee (male) ...	67 mm.	89 mm.

In the adult human skull these two measurements much more nearly approximate. In the adult male the inter-fronto-malar width measurement usually tends to exceed that of the minimum frontal diameter. In the child, where the frontal development greatly exceeds that of the facial, the inter-fronto-malar width is less than that of the minimum frontal diameter. In the adult female, owing to the more infantile facial form, the inter-fronto-malar width measurement tends to be more nearly approximated to, and indeed often rather less than, that of the minimum frontal diameter. Now, in the various cranial series from which I have obtained the averages given below, with the exception of the British, male and female crania were included without distinction; for this reason these averages must be taken as merely expressing the conditions found in the present series of crania. In order to institute a really trustworthy comparison between the inter-racial averages obtained from these two measurements, distinction should be made between the sexes of the crania. So far at any rate as can be judged from the present series, the Australian and Melanesian races would appear to have on the average the greater excess of this measurement as compared with that of their minimum frontal diameter.

	Average Minimum Frontal diameter.	Average Inter-fronto-malar width.
197 Australians	95·03 mm.	99·77 mm.
62 New British	93·37 mm.	98·57 mm.
21 New Caledonians ...	92·76 mm.	98·05 mm.

In the series of British crania these two measurements are much more closely approximated.

	Average Minimum Frontal diameter.	Average Inter-fronto-malar width.
76 British	98.36 mm.	98.93 mm.

In the Eskimo the difference is slightly greater but quite small.

67 Eskimo	96.01 mm.	97.34 mm.
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The Chinese, New Zealanders, Chatham Islanders, Tasmanian, West African, and Kafir races appear to occupy an intermediate position in this respect.

	Average Minimum Frontal diameter.	Average Inter-fronto-malar width.
89 Chinese	92.96 mm.	95.15 mm.
83 New Zealanders...	94.96 mm.	97.32 mm.
64 Chatham Islanders	94.08 mm.	97.82 mm.
37 Tasmanians	94.07 mm.	97.32 mm.
95 West Africans	95.44 mm.	98.36 mm.
83 Kafirs	99.43 mm.	101.68 mm.

Among dwarf races it would seem probable that their orbito-facial development is exceeded by their frontal development, and that in this respect their crania would approximate rather to the infantile type.

	Average Minimum Frontal diameter.	Average Inter-fronto-malar width.
37 Andamanese	91.77 mm.	91.08 mm.

CORRELATION BETWEEN FRONTO-INTERORBITAL WIDTH AND THE FACIAL WIDTH AND LENGTH MEASUREMENTS AND FACIAL INDEX.

The correlation between the fronto-interorbital width and *interzygomatic width* is fairly high, the average correlation coefficient from the three series being + .56, while the correlation between fronto-interorbital width and *intermalar width*

is higher still, the average correlation coefficient being + .62. That the degree of correlation between fronto-interorbital width and interzygomatic width is less than that between fronto-interorbital width and intermalar width, is in all probability due to the fact that variations in the muscular power and development of the lower jaw tend to have a greater effect on the zygomatic arch than on the malar bones, increase in size and power of the mandible associated with an increase in size and development of the temporal muscle tending to cause a pronounced bowing outward of the zygomatic arch with a corresponding increase in the facial width. Apart from these factors it seems to be evident that increase in interorbital width would tend to be associated with an increase in facial breadth, whether that breadth be estimated by the measurement across the malar bones or between the zygomatic arches. That this correlation between the two measurements, interorbital width and facial breadth, can only be compared between individuals belonging to the same race is at once evident when a series of crania representing different races is examined; as an extreme case may be quoted the crania of the Eskimo, for there we find an extremely narrow average interorbital width associated with an extremely high average facial breadth, the width across the malar and zygomatic bones in that race being evidently due to the great muscular power and development of the jaw, while their narrow interorbital width is, as we have already seen, associated with their small nasal capacity. In the race therefore the width between malar bones and zygomatic arches seems to depend mainly on the general amount of muscular power and development of the jaw that may be a feature of that race; at the same time, however, an increase in nasal breadth, associated as it is with an increase also in interorbital width, will probably also cause a certain addition to the facial broadening. In the individual on the other hand, although variations in the muscular power and development of the lower jaw will still influence to a large extent the breadth of the face, yet nasal width and interorbital width will also have a strong influence in this direction and we should then expect to find, as we do indeed find, quite a high degree of correlation between interorbital width and facial breadth.

As regards the correlation between fronto-interorbital width and facial length (as measured from the nasion to the alveolar point), no great degree of correlation between these two measurements was to be expected, and indeed as actually found from the three series the average correlation coefficient was no higher than + .27. Any correlation therefore, beyond what was proportionate, would in all probability be due to the influence on both measurements of the nasal height, for as we have already seen nasal height displays a certain amount of correlation with the interorbital width and of course the measurement of the nasal height forms a large part of the naso-alveolar length measurement. That this is so seems to be shown by the evidence from the degrees of correlation in the Eskimo series, for there where we have found the highest degree of correlation between nasal height and interorbital width we also find the highest degree, in the three series, of correlation between interorbital width and naso-alveolar length. Seeing that the degree of

correlation between interorbital width and facial breadth is so much greater than that between interorbital width and facial length, and seeing also that the facial index is based on the proportions of the length of the facial skeleton to its width, that is to say that the longer the face in proportion to its width the higher the index, while the shorter the face in proportion to its width the lower the value of the index, we should expect to find negative correlation displayed between interorbital width and facial index and a greater breadth between the orbits tending to be associated with a lower value of facial index. The African series has been examined in this respect and as was expected a negative correlation found, the correlation coefficient being $- \cdot 2307$.

CORRELATION BETWEEN THE FRONTO-INTERORBITAL WIDTH AND THE
GNATHIC MEASUREMENTS AND INDEX.

The correlation between fronto-interorbital width and basi-nasal length is fairly high, an average correlation coefficient of $+ \cdot 44$ being obtained. It is difficult to see why there should be so high a degree of correlation between these two measurements, as they would not appear to have much in common, but it might possibly be partly due to the influence of cranial length on both measurements. The correlation between fronto-interorbital width and basi-alveolar length is rather less, the average correlation coefficient being $+ \cdot 33$, and should probably be regarded rather as proportionate than otherwise. Now Flower's gnathic index is based on the proportions of the basi-alveolar to the basi-nasal length, and the greater the basi-alveolar length in proportion to the basi-nasal, the greater the index; since therefore, as we have already seen, the degree of correlation between interorbital width and basi-nasal length is greater than that between interorbital width and basi-alveolar length, we should expect to find a negative correlation between interorbital width and the gnathic index. The African series were examined in this respect and were found to support this conclusion, the resulting correlation coefficient being $- \cdot 1402 \pm \cdot 0609$.

CORRELATION BETWEEN FRONTO-INTERORBITAL WIDTH AND THE
PALATO-MAXILLARY MEASUREMENTS.

The fronto-interorbital width is correlated with the palato-maxillary breadth, an average correlation coefficient of $+ \cdot 38$ being obtained; this was to be expected as the nasal width, also, displays a certain amount of correlation with the palatal breadth, the average correlation coefficient obtained from the series of correlations between nasal width and palato-maxillary breadth being $+ \cdot 38$.

The correlation between fronto-interorbital width and palatal length is less, the average correlation coefficient being only $+ \cdot 29$. Even so low a degree of correlation was not expected as the two measurements would not appear to have much connection with each other. This degree of correlation should perhaps be regarded more as proportionate than otherwise, though the correlation of the nasal height with both measurements might cause a slight correlation to appear between the two, the nasal height being correlated with palato-maxillary length, average

correlation coefficient being + .36. [In connection with this it might be noted that in the gorilla and other anthropoid apes great nasal height (or rather length) is associated with great palatal length.] This correlation between interorbital width and palatal breadth and length seems to apply merely to the individual and does not appear to possess any inter-racial value.

GENERAL CONCLUSIONS.

It has been already seen that of the cranial factors it is the greater or lesser width across the frontal bone that has in the individual the main influence in determining the greater or lesser width between the orbits; the facial factor of nasal capacity seeming to be of very secondary importance in this respect. As this influence in its bearing on the individual has already been discussed, it now remains to be examined as to how far it may be considered as having any value inter-racially. The following table gives the various values of the correlation coefficients as obtained from the correlation between fronto-interorbital width and minimum frontal diameter through a series of adult specimens belonging to various races.

73 Eskimo	+ .617 ± .0489	63 New Britain	+ .6866 ± .0449
76 British	+ .6548 ± .0442	38 Fijians	+ .6397 ± .0646
64 Chatham Islanders ...	+ .5047 ± .0629	202 Australians	+ .5386 ± .0337
84 New Zealanders...	+ .674 ± .0401	38 Tasmanians	+ .4813 ± .0841
89 Chinese	+ .6208 ± .0439	95 West Africans...	+ .6129 ± .432
37 Andamanese	+ .4916 ± .0841	86 Kafirs	+ .588 ± .0476
21 New Caledonians ...	+ .6576 ± .0836		

The results are very uniform and give the quite high average correlation coefficient of + .6. The maximum correlation being found in the New Britain series + .69, the minimum in the Tasmanian + .48. When, however, we regard this correlation in its inter-racial aspect, it falls very much in value; this is illustrated in the graph drawn up to display the correlation between the average interorbital width and average minimum frontal diameters through this same series of races. The resulting correlation coefficient is only + .4631 in value, while graphically, the Eskimo with the lowest average interorbital width of 22.5 mm. are shown to have an average minimum frontal diameter only 2.74 mm. less than that of the Kafir, although the latter possesses the highest average interorbital width of 28.25 mm. It is therefore evident that the cranial factor of frontal breadth, though having the strongest amount of influence on the interorbital width in the individual, yet in the race must be subservient to the influence of some other factor, which other factor, as has been noted before and will be discussed again later, is the greater or lesser extent of the nasal capacity. As I have already pointed out in the examination of the influences of frontal breadth on interorbital width, in the individual the

influence of frontal capacity as a whole tends to be obscured. In the race, on the other hand, frontal breadth itself is dependent to a large degree on the frontal development, hence we should now expect to find the position reversed, and that the frontal development as a whole would appear as the prime factor, frontal breadth being only a secondary consideration ; [another point which I think still further limits the value of frontal breadth in this respect is the fact that in certain primitive races, such as the Australians and Tasmanians, etc., the high degree of development of the temporal muscles gives rise to the presence of very pronounced temporal ridges, which ridges increase the breadth of the forehead to a much greater extent than would have been warranted by the degree of frontal development alone]. By an appeal to this influence of frontal development on the interorbital width in the race, may possibly be explained the values of averages for certain measurements found in certain races, which would otherwise seem to form exceptions to the rule that nasal capacity is of primary importance in the determination of the extent of the interorbital width. The British series is a case in point; their average interorbital width is 26.32, which is very large when it is considered that their nasal capacities are of no great extent; when, however, we examine their frontal development we find that they display broad and capacious foreheads; this degree of frontal development would therefore, it seems probable, tend to modify the influence of their nasal capacities, which would have otherwise influenced them in the direction of a smaller extent of interorbital width. Again both the South African Bushman and the Tasmanian have in proportion to the size of their crania, large nasal capacities, but from their respective nasal measurements the Tasmanian would seem to have a larger nasal capacity than the Bushman, yet for all that the Bushman has very nearly as large an interorbital width as the Tasmanian: this fact would appear to be the reverse of what one would have expected until a comparison is made between their respective frontal development. It is now evident that the frontal development of the Bushman far exceeds that of the Tasmanian, the Bushman displaying a high prominent and capacious forehead as compared with the low retreating forehead of the Tasmanian. This then would very well serve to explain the former apparent contradictory evidence from the comparison between their interorbital widths and nasal capacities alone; it will be apparent that the low frontal development of the Tasmanian would tend to lessen the influence on the interorbital width of their nasal capacity, while on the other hand that the high degree of frontal development of the Bushman would tend to heighten the influence of his nasal capacity, so that we now find, contrary to what one would have expected from their nasal measurements alone, that the interorbital width of the Bushman is as large as that of the Tasmanian. An appeal to these same causes would also help to explain the fact that although the West African negro and Australian have practically the same nasal measurements, yet the interorbital width of the Australian is 3.46 mm. less than that of the negro; for we find on examination that the Australian possesses a low retreating and poorly developed forehead while on the other hand that the forehead of the negro is high, capacious

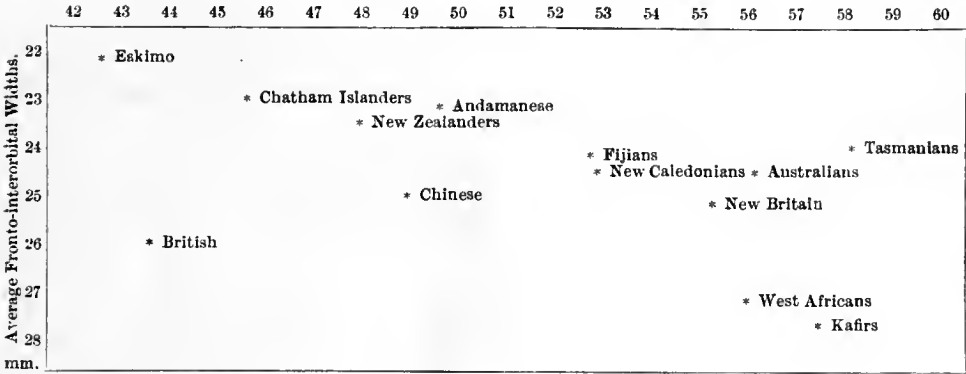
and prominent. This difference therefore in their respective frontal developments would very well explain the lesser extent of the interorbital width in the Australian as compared with that of the same measurement in the West African negro. These considerations have led me to the conclusion that although it is very evident that the influence of nasal capacity on interorbital width is of primary importance inter-racially, yet this influence may tend to be either extended or modified by that of the greater or lesser extent of the frontal development, also again that although in the individual it is the influence of frontal breadth that seems to be of most importance, in the race on the other hand it is the frontal development as a whole that possesses the greater influence on the interorbital width, so that inter-racially, with increase in the development of the forehead would tend to be associated an increase in the width between the eyes, while individually more would depend on the greater or lesser extent of the frontal breadth.

Turning now to the influence of nasal capacity on the interorbital width regarded from the standpoint of its inter-racial value; it has already been demonstrated earlier in this paper that the influence on the interorbital width of the nasal capacity in the individual is not very great, and although it is the chief facial factor in this respect is yet quite subservient to the influence of cranial factors, of which cranial factors that of frontal diameter seems to be the most important. I should therefore think it probable that the general extent of the nasal capacity in the individual is, in proportion to the size of the individual's skull, governed rather by its general extent as exhibited in the race as a whole, and due, for the most part, as it seems likely to be, to the influences of physical environment, would not be liable to such great individual variations as might the cranial factors influenced as they are by the cranial form development of the brain, etc.; these reasons might therefore account for the degree of correlation between nasal capacity and interorbital width being, in the individual, lower than that between frontal diameter and interorbital width. When, however, we regard the influence of the nasal capacity on the interorbital width on the race in general, we should expect to find the position reversed; the general average extent of the nasal capacity would now become of primary importance in determining the general average extent of the interorbital width, so that the more capacious the nasal form of any race the greater the general average width between the eyes of that race, and this subject, in a secondary degree only, to the influences of the general frontal development. Taking the racial series under examination, if the above inferences be correct, it ought to be possible to illustrate graphically this influence on the race of nasal capacity on interorbital width. It was evident that at the lowest end of the scale would have to be placed the Eskimo possessing as they do the lowest average nasal capacity (average nasal width 22.75 mm.) associated with the lowest average interorbital width of 22.6 mm., while at the top of the scale would come the Kafir with the largest average nasal capacity (average nasal width 27.41 mm.) associated with the largest average interorbital width of 26.77 mm.; but here arose the difficulty as to what measurement or index could be considered thoroughly qualified to be used as

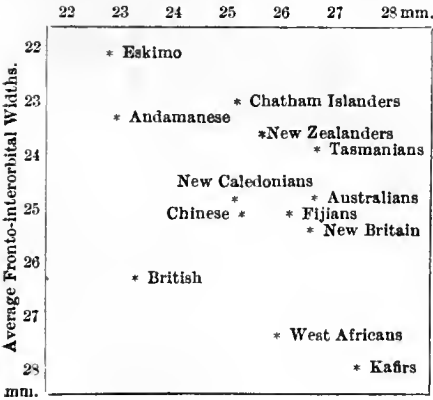
a correct guide to the extent of the nasal capacity. Now, as has been already pointed out, in the race it is the greater or lesser extent of the inferior nasal meatus that in the main governs the greater or lesser capacity of the nose, so that at first sight it might seem possible that in order to ascertain the nasal capacity it would only be necessary to ascertain the volume of the cubical contents of the inferior nasal meatus in the same manner as the capacity of the cranium itself is usually determined. On a close examination, however, it will, I think, appear evident that increase in the inferior nasal meatus, at any rate in so far as it influences the interorbital width, is associated with such an increase as would allow of a freer passage of air through the nasal respiratory channels. Such an increase would therefore be mainly in the direction of an increase in breadth, with possibly also a certain amount of increase in the height, while for this purpose the length measurement, as estimated from the margin of the posterior to that of the anterior nares, would be of no value at all; indeed this length measurement would seem to depend very largely on the length of the palate, as in its extreme form this can be very well seen in the crania of the gorilla and other anthropoid apes. Since therefore the length measurement is of just as much importance as the others in its influence on the extent of the volume of any space, and since it seems to have been determined that the length measurement is of no value in the determination of the nasal capacity for our present purposes, it is very evident that any such method of determining the nasal capacity would be wholly untrustworthy. Again with regard to the value of the nasal index for this purpose, it is true that the platyrrhine races do indeed possess larger nasal capacities than those possessed by the leptorrhine races; still it must always be remembered that the nasal index only expresses the relative proportions between the two measurements, nasal height and nasal width, and does not take into account the actual sizes of the measurements themselves. This limitation then must be taken into consideration in any attempt to correlate the nasal index with an absolute measurement such as is the interorbital width. On the whole I should be inclined to think that perhaps the best guide would be the actual measurement across the maximum width of the inferior nasal meatus. I have however drawn up two tables from the inter-racial averages obtained by me; one to illustrate the inter-racial correlation between the interorbital width and the nasal index, the other that between the interorbital width and the nasal width. When these are examined together and taken in conjunction with the table of inter-racial averages obtained from the nasal and orbital measurements of the same series of crania, I think it will be at once evident how strong an influence on the interorbital width is that possessed by the nasal capacity through this large series of different races. An apparent departure from the general rule was formed by the series of Andamanese crania. Although they fall into line in the table of correlation between interorbital width and nasal index, yet when the actual sizes of these measurements are examined it is found to be the case that although their nasal measurements are very small, the average nasal width being only 22.80 mm. and their average nasal height 45.49 mm., yet they display the

proportionally large interorbital width of 23·7 mm. In this respect their skulls would seem to resemble the infantile type. Other cases of exceptions which appear, such as those of the British, Tasmanian, and Australian, have already been explained by a reference to their respective frontal developments. On the whole, however, this correlation between nasal capacity and interorbital width seems very constant throughout this large and representative series of races; it may be modified or obscured in certain instances, but when taken in its broadest application it is a very striking fact and leads on to the interesting question as to the causes which may produce in the human skull this increase in nasal capacity correlated as it is with a corresponding increase in the width between the eyes; there seems at any rate to be indicated from the results of the present research a very evident correlation between the extent of the nasal respiratory channels and that of the nasal capacity associated with the fact that the smallest nasal capacities appear to be found among races inhabiting colder climates while the larger nasal capacities seem to be associated with those races which inhabit hotter and more equatorial regions. Not less interesting perhaps is the apparent deduction of an increase in frontal development being also associated with an increase in the width between the eyes, and although for various reasons this latter correlation is not so evident as the former, still I think it will no less be found to actually exist, and when taken into conjunction with the other to have an important influence in determining in the race the extent of the interorbital width.

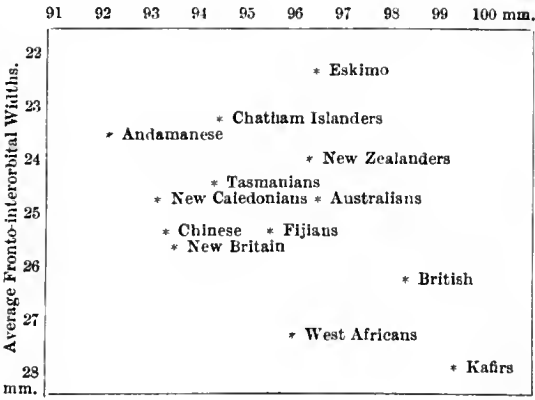
AVERAGE NASAL INDICES. 13 Races.



AVERAGE NASAL WIDTHS. 13 Races.



AVERAGE MINIMUM FRONTAL DIAMETERS. 13 Races.



		Nasal width.	Nasal height.	Nasal index.	Inter-dacryonic width.	Inter-fronto-malar width.	Minimum frontal diameter.	Fronto-inter-orbital width.	No. of crania.	Nationality.
1.	Maximum	...	...	...	...	...	...	...	...	...
	Average	25.5 mm. 22.64	61.5 mm. 53.65	50 42.32	22.5 mm. 18.55	108 mm. 97.34 (67 crania).	108 mm. 96.05	27.5 mm. 22.62	68	Eskimo.
	Minimum	17	41.5	31.78	15.5	87	85	19		
2.	Maximum	...	...	...	...	...	...	...	...	...
	Average	29.5 23.34	62 53.66	54.90 43.59	28 21.5	108 98.93	110 98.36	34 26.32	76	British.
	Minimum	19	48	34.55	16	90	89	22		
3.	Maximum	...	...	...	...	...	...	...	...	...
	Average	27.5 24.47	57 51.78	53.19 47.35	30 22	106 98.22	107.5 96.56	34.5 26.28	16	Afghans.
	Minimum	20.5	47	39.42	17	90	84	22		
4.	Maximum	...	...	...	...	...	...	...	...	...
	Average	31 28.15	57.5 51.23	60.23 49.30	28.5 21.22	109 95.15	106 92.96	32 25.36	89	Chinese.
	Minimum	21	43	41.18	16	85	79	21		
5.	Maximum	...	...	...	...	...	...	...	...	...
	Average	25 22.80	52 45.49	63.29 50.23	27 21.99	99 91.06	101 91.77	28 23.70	37	Andamanese.
	Minimum	18.5	39.5	43.02	17	82	79	20		

6.	Maximum	...	35	53	74.07	33	111	107	36	95	West Africans.
	Average	...	26.33	47.18	58.02	23.63	98.36	95.44	27.53		
	Minimum	...	21	39.5	42.42	16.5	89	85	20		
7.	Maximum	...	31.5	55	73.68	29.5	110	109	34.5	86	Kafirs.
	Average	...	27.41	47.96	57.36	24.77	101.68 (83 crania).	99.30	28.30		
	Minimum	...	23	38	46.60	19.5	91	86	23		
8.	Maximum	...	30.5	52	66.25	29.5	108.5	106	31.5	15	Hottentots.
	Average	...	26.70	44.47	60.17	23.40	98.17	96.30	26.77		
	Minimum	...	24	39	51.92	20.5	90	88.5	23.5		
9.	Maximum	...	29	47.5	70.66	25.5	98	97.5	27	18	Bushmen.
	Average	...	24.72	41.47	59.80	21.81	93.28 (17 crania).	92.08	24.17		
	Minimum	...	21	37.5	51.16	18	85	86	20		
10.	Maximum	...	31	56	69.51	27	111	108	31.5	202	Australians.
	Average	...	26.39	47.71 (201 crania).	55.47 (201 crania).	21.48	99.77 (197 crania).	94.97	24.98		
	Minimum	...	21.5	40	43	17	88	80.5	19.5		
11.	Maximum	...	29.5	50.5	65.85	26.5	106	104	30	38	Tasmanians.
	Average	...	26.66	45.68 (37 crania).	58.41 (37 crania).	21.87	97.32 (37 crania).	94.01	24.37		
	Minimum	...	24	40	52.08	18	91	84.5	20.5		

		Nasal width.	Nasal height.	Nasal index.	Inter-dacryonic width.	Inter-fronto-malar width.	Minimum frontal diameter.	Fronto-inter-orbital width.	No. of crania.	Nationality.
12.	Maximum ...	31 mm.	54 mm.	65.55	26 mm.	108 mm.	104 mm.	31 mm.	63	New Britain.
	Average ...	26.12	47.23	55.44	22.02	98.57 (62 crania.)	93.36	25.46		
	Minimum ...	22.5	40.5	47	16.5	87	83	19		
13.	Maximum ...	26.5	59	56.97	24.5	109	100	30.5	16	Solomon Islanders.
	Average ...	24.59	51.03	48.44	21.28	99.69	93.19	26.12		
	Minimum ...	22	43	41.51	18.5	92	86	23		
14.	Maximum ...	28.5	53	58.16	24.5	105	102	28	21	New Caledonians.
	Average ...	25.26	47.71	53.07	21.55	98.05	92.76	24.88		
	Minimum ...	24	43	48	17.5	92	83	21.5		
15.	Maximum ...	29.5	55.5	60.22	26.5	108	105	30	38	Fijians.
	Average ...	26.17	49.60	52.70	21.99	98.62	95	25.28		
	Minimum ...	23	44	43.75	17	88	86	21.5		
16.	Maximum ...	26	57	53.33	22.5	100.5	95.5	27	7	Micronesians.
	Average ...	24.64	51.5	49.31	20.21	95.64	89.71	23.50		
	Minimum ...	24	45	46.30	17.5	90	83.5	22		

17.	Maximum	...	29	61	56.86	25.5	114	111.5	30.5	11	Polynesians (mix.).
	Average	...	25.5	54.73	46.69	20.55	99.73	96.32	25.5		
	Minimum	...	22	51	41.51	17.5	92	91	22.5		
18.	Maximum	...	31.5	61	57.69	25.5	107	105	29	84	New Zealanders.
	Average	...	23.23	53.51	48.21	20.15	97.32 (83 crania)	94.95	23.96		
	Minimum	...	22	46	40.68	16	89	82.5	19		
19.	Maximum	...	28.5	61	55.56	24	104	103.5	29	64	Chatham Islanders.
	Average	...	24.98	55.02	45.54	19.76	97.82	94.08	23.27		
	Minimum	...	21.5	48.5	38.39	16.5	85	85.5	20		

CAVE EXPLORATION AT GIBRALTAR IN SEPTEMBER, 1910.

[WITH PLATES XL—XLIII.]

BY W. L. H. DUCKWORTH.

INTRODUCTION.

THE skull brought from Gibraltar many years ago by the late Dr. George Busk, F.R.S., and presented by him to the Hunterian Museum, has been examined recently with great minuteness by Professor Sollas, F.R.S., Dr. A. Keith (Conservator of the Hunterian Museum), and Dr. G. Sera, of Naples.¹ In view of the interest attached to the results of these investigations, and in consideration of the small amount of information available as to the circumstances under which the subject of these researches was discovered, I determined to visit Gibraltar in September, 1910. My reception at the hands of the naval, military, and civil authorities of Gibraltar was all that could be desired, and I have appended a list of the names of those to whom I am indebted for their interest and co-operation in my work. A brief summary of the results was published in *The Gibraltar Chronicle* of October 15th, 1910. In the present place, I wish to submit a more detailed account, having now worked through the material which has been deposited at the Anatomy School at the University. For this favour, the University is indebted to Major-General Perrott, C.B., lately Acting Governor of Gibraltar.

The present account falls naturally into two principal subdivisions, viz.:—A descriptive part, and a critical appendix. The purely descriptive portion will be taken first.

A. DESCRIPTION OF THE WORK.

In visiting Gibraltar, my first object was to learn from personal observation and inquiry, so much as might be possible about the circumstances of the discovery of the now classical "Gibraltar Skull." But in addition to this quest, another enterprise was suggested to me after my arrival, viz.:—the exploration of a cave in a position difficult of access, and deemed on that account to be undisturbed by excavation either at the hands of military engineers or of archaeologists. The descriptive part of this account must be subdivided therefore into sections dealing respectively with these two investigations.

I. FORBES' QUARRY AND ITS SURROUNDINGS.

It will be convenient to refer to the Gibraltar cranium already mentioned, as the Forbes' Quarry Skull, and this designation will be quite sufficient, for no other

¹ For the most recent literature, cf. Dr. Sera, *Archivio per l'Antropologia e la Etnologia*, vol. xxxix, fasc. 3-4, 1909. Also an article in *The Times*, August 2nd, 1910.

cranium has been obtained from that locality since the discovery of this specimen. The first point I wish to make quite clear in this connexion, is that the original minute of the "Gibraltar Society," recording the receipt of the specimen, states that it came from "Forbes' Quarry." There is no mention of Forbes' Battery, nor of "brecciated talus." Both these expressions occur in the late Sir W. Flower's descriptive note on the specimen in the "Catalogue of the specimens in the Museum of the Royal College of Surgeons," 1879. The quarry is close to Forbes' Battery, but it is important to note that the more precise attribution of the locality of the find to the "brecciated talus" is inferential only. This point is mentioned in Dr. Busk's communication to the British Association in September, 1864, but it appears advisable to recall the fact that we have to deal with inference or presumption only in this respect.¹

Forbes' Quarry still exists, and, having been worked at intervals since 1848, its boundaries have of necessity been enlarged. As stated in Sir William Flower's catalogue the quarry is "under the north front of the Rock of Gibraltar." The actual appearance of the surface exposed by the workings in this quarry can be described more clearly with the aid of the sketch (Plate XL, Fig. 1), to which reference will now be made. The face that has been worked must have had much the same character throughout, and it is quite peculiar, for the quarry lies exactly at the zone of union of the solid rock, shown in Plate XL, Fig. 1, to the right, with an extraordinary mass of consolidated *débris*, known as the "brecciated talus." That the skull was discovered in the brecciated talus is therefore quite possible, but I do not understand why Dr. Busk should have considered that it was derived from the *superficial part*. For the talus is, in fact, exposed vertically throughout a very wide extent.

As the observer stands in the quarry examining the worked face, he is presented with the talus (whether in its superficial or deeper parts), and secondly, the more solid rock, as alternative matrices to which he may refer the skull. We see that Dr. Busk selected the former. The rock is so solid, that it would be excluded at once, were it not that just at this spot it contains a cave. The latter is indicated in Plate XL, Fig. 1, above the ladder. Its position seems to indicate that previously to the working of the quarry, its mouth must have been closed.² One of the inspectors of police at Gibraltar can remember this cave some thirty years ago, when it was much deeper. It served then as a rendezvous for smugglers. The reduction in depth is doubtless due to the extension of the quarry whereby the cave walls are gradually being removed from its mouth inwards. It should be

¹ For a full discussion of other points in the history of the Forbes' Quarry skull, Dr. Sera's masterly summary in the *Archivio per l'Antropologia e la Etnologia*, vol. xxxix, fasc. 3-4, 1909, should be consulted. I have nothing further to add to this aspect of the subject, beyond what I have stated in the text. The discovery of the minute in the records of the Gibraltar Society was made by Colonel Kenyon, R.E.

² A fall of many hundreds of tons of rock occurred on Christmas Day, 1910; and in consequence Forbes' Quarry is now largely filled with the *débris*, and the mouth of the cave blocked up. Cf. Appendix IV.

added that the cave is not more than 30 feet above sea level, and that it is probably the result of marine erosion at a remote epoch; and at a remote epoch also, the mouth of this cave must have been closed, until it was reopened by the quarrymen. This reopening was probably not very long ago, comparatively speaking, for I cannot make out the quarry in illustrations of this part of the Rock drawn in the eighteenth century.¹

Further excavations in the locality whence the Forbes' Quarry skull was derived, must therefore be undertaken either in (a) the talus or (b) the cave. In the former case, the enterprise will prove of considerable magnitude, since to provide a reasonable hope of success, great quantities of the *débris* must be removed. A note on the character of the talus is given in the sequel, and will make this point clear. Moreover the work should not be that of excavation. This would be very dangerous on account of the nature of the talus, so that removal of the *débris en masse* from the surface downwards must be undertaken.

In regard to the cave, the following abstract of my notes will give an idea of the conditions obtaining there.

Tuesday, September 13th, 1910.—Cleared rubbish, etc., from the entrance of the cave, and tested the floor in various parts near the mouth. Found only a little sand above a hard stalagmite floor. Then moved to deepest part of cave (the floor inclines slightly upwards as this is approached) and cleared small boulders and a small amount of sand from a depression found there. Nothing more to be done without extensive removal of floor. Superficially, but in a sand-filled cleft in stalagmite, were found the skeleton of a rat nearly complete, and some bones of a small bird, and a rodent smaller than a rat.

Wednesday, September 14th.—Commenced removal of floor in the deepest part of the cave. Three shots were fired with black powder. The first failed, owing to the bore-hole penetrating a layer of red sand (quite distinct from the powdery red "earth" of other caves) which mitigated the effect of the blast. The results of the other shots show that the floor consists of alternate layers of stalagmite and the red sand. The latter is of medium consistency, and the beds are rarely more than 3 inches thick, containing a few small "rolled" pebbles, and numerous pipe-stem-like fragments of stalactites, together with innumerable small masses of concreted limestone. The ulna of a bird of the size of a pigeon is the only representative of animal remains.

Thursday, September 15th.—A narrow cleft was noticed yesterday to lead downwards. It contained very damp clay and also sand, but no animal remains.

Friday, September 16th.—A crater was gradually excavated in the deepest part of the cave-floor. Dynamite and black powder were used, the latter proving the more effective. At a depth of 3 feet 6 inches, the sand is much coarser, though

¹ At the risk of being considered tedious, I may add that in 1727, a certain Lord Forbes held a naval command at Gibraltar; the battery, called afterwards Forbes' Battery, then formed part of the "Prince's Lines." The talus then seems to have covered the whole area now laid bare in the quarry.

pockets occur containing genuine red sand like that near Rosia, while others are filled with material resembling clay. The pebbles from the deepest sand conglomerate are less rolled and worn than those higher up. A specimen of helix (? *H. vermiculata*) was found embedded at 3 feet 6 inches from surface (cf. Plate XLI, Fig. 6, No. 2). The humerus of a bird (*Columba*) was found at 3 feet. At 4 feet the solid limestone rock was encountered.

Saturday, September 17th.—From the crater in the deeper part of the cave, a trench was cut towards the mouth. The sand beds diminish in number and thickness, while the stalagmite remains in considerable amount. Pockets of red sand were found near the mouth of the cave.

From the foregoing account, it is apparent that the cave contains nothing save the very earliest and seemingly marine deposits covered with stalagmite. In regard to the animal remains, the rodents found in the superficial layers may have carried the bones of birds to a considerable depth by way of small fissures or clefts which would afford access to the sandy strata. The helix is seemingly a land species, but it might have been introduced by marine action.

I did not make a complete excavation of the floor, owing to lack of time and the slowness enforced upon the workmen by the hardness of the successive stalagmite strata. But the uniformity of the conditions justifies the assumption that the remaining parts of the floor will not prove very different from those already explored. In that case, it is evident that any remains of human beings must have been removed long ago from deposits in the cave which no longer exist.

Before passing to the second subdivision of this part of my work, I will add a note to what I have already written in regard to the "brecciated talus" as exposed in Forbes' Quarry.

II. THE BRECCIATED TALUS.

On the afternoon of September 13th two men were instructed to clear out a fissure between two great blocks of limestone in the brecciated talus. The fissure was filled with sandy rubble and masses of conglomerate. The work was slow, as much care had to be taken in undermining the large masses of stone. The only *mammalian* remains found were fragmentary bones of a goat (part of the humerus, Plate XL, Fig. 2) and of a rabbit. The latter bones were encrusted with limestone deposited from solution. Besides these, the only bone found was the humerus of a pigeon, and this was probably of very recent origin, for domestic pigeons are kept in the quarry by the foreman. The invertebrate remains (Plate XL, Fig. 2, Nos. 1–5) are more interesting. They comprise shells of an oyster (*Ostraea*) and a limpet (*Patella*) of undetermined species, covered with a deposit of limestone. In addition to these were found examples of *Purpura lapillus*, *Arca arabica*, and *Vidua climacterica* (Plate XL, Fig. 2). Finally to these marine forms must be added two species of helix¹ (Plate XL, Fig. 2), viz., *Helix vermiculata* (Plate XL,

¹ For the identification of these species of helix, I am indebted to Mr. J. Wilfrid Jackson, F.G.S., of Victoria University, Manchester.

Fig. 2, No. 4), similar to that found at a depth of 3 feet 6 inches in the cave; the second (not figured) is *H. coquandi* (Morelet). Both occur in North Africa as well as in Spain. The marine forms are the most interesting, and the *Videna* at least is not edible. Their presence may be taken as indicative of a submergence of the brecciated talus, or at least of its lower portion, since its formation.

But it should be noted that the component fragments of the talus are not rounded or "rolled." They adhere with great tenacity, and are very markedly angular. The talus as seen in Forbes' quarry is really part of a vastly greater mass of which this forms the northern limit. In its greatest extent, the talus attains a height of about 350 feet above sea-level. To the east of Forbes' Quarry the talus contains much sand with small limestone fragments. The sand is used for building purposes, and the process of "screening" shows very conveniently the various degrees of coarseness presented by it. In some parts the limestone fragments are regularly "bedded," but I find a note in my journal to the effect that the fragments are curiously little "rolled." At the highest part of the great slope (but still beneath the "North Front") some pits and trenches may be seen. The sections show little if any sand, while the numerous limestone fragments are small (rarely larger than an orange). They are not cemented together or conglomerated as in the deeper and lower parts of the slope. This is but natural, since they have been detached from the cliff most recently, so that lack of time as well as their position on the surface easily account for this contrast.

Still further east than this talus are situated the well-known Catalan Bay sand slopes. It should be noted that the sand of the latter is distinctly finer than that described in the preceding paragraph as occurring on the great slope beneath the "North Front." In the Catalan sand slopes may be seen numerous "concretions" distinct from anything met with under the "North Front." They have been formed quite recently, and indicate the first stage in the consolidation of a mass of wind-blown sand. In the same fine sand I found a small block of reddish conglomerate or breccia, but this may have fallen from above. So far as the strata underlying the Catalan sands are concerned, it will amply suffice to refer the reader to the invaluable report on the geology of the Rock of Gibraltar, made by Professors Ramsay and Geikie.¹

III.—THE EXPLORATION OF A CAVE CONTAINING NEOLITHIC REMAINS.²

In the introductory paragraph mention is made of a second cave which I was able to explore during the latter part of my visit to Gibraltar. The cave in question

¹ Cf. *Quarterly Journal of the Geological Society*, vol. 34, 1878.

² The classical sources of information as to the contents of the Gibraltar caves are two papers by the late Dr. G. Busk, F.R.S. One of these papers deals with the results of the famous Captain Brome, whose memory is perpetuated in the name (*Genista*) by which four of the caves are distinguished. The paper is to be found in the *Transactions of the International Congress of Prehistoric Archaeology*, 3rd Session, 1868. Dr. Busk's second paper was published in the tenth volume of the *Transactions of the Zoological Society*, 1879. This paper deals with an older fauna than that provided by Cave S, and by several of the caves excavated by Captain

is about one mile distant from the North Front, and is situated at an altitude of about 800 feet above sea-level. It opens on the Mediterranean face of the Rock, due east of St. Michael's platform and almost immediately beneath a still higher cave, designated Holyboy's Cave on the survey made by Sir Charles Warren. In my notes I refer to it as Cave S, using this reference because I was first taken to it by Major Sewell, R.E., who had entered it many years ago.

About 30 feet below Cave S, the great catchment area (constructed by the Admiralty) abuts on the nearly vertical rock and marks the upper limit of the underlying sand-slope now concealed by corrugated iron plates. The cave is accessible to skilled and active cragsmen only; but thanks to the kind co-operation of Mr. Wakeford of H.M. Dockyard, two of the men constantly engaged on the catchment area were placed at my disposal. These men fixed ropes and a ladder which made access to the cave perfectly easy. It is highly improbable that any human beings had entered the cave in recent years, and indeed Major Sewell considered that the floor was found exactly as he remembered it on the occasion of his earlier visit some twelve years previously. Certainly no signs of any kind of excavation were detected. The cave is remarkably dry, though this applies especially to one side and part of the deeper extremity. The mouth was partly obstructed by vegetation, the Palmetto and a genista-like shrub. A small collection of recent land-mollusca was made in this part of the cave. No bats were seen at any time during the excavation, nor were flies noticed. In a similar cave under the North Front visited by me a few days earlier, swarms of these Diptera were present, and would render any prolonged sojourn in such a cave quite uncomfortable. The general form of Cave S will be best understood by reference to the accompanying plan and section (Figs. 1 and 2), which are drawn approximately to scale. It will be noted that the main axis of the cave slopes downwards towards the mouth. High above sea-level though this cave is situated, its formation might be ascribed to marine influences. It has practically none of the characters of a fissure-cave. Its existence thus bears witness to a submergence of the Rock to at least this extent, viz., 800 feet. This is by no means the only evidence of such submergence. Raised beaches and fossil or semi-fossil marine mollusca¹ have been recorded at 700 feet above the present sea-level. So far as is known, this great submergence must have occurred since the formation of what is called the "Great Agglomerate" of Buena Vista and its neighbourhood on the western side of the

Brome. In the second volume of the *Collected Memoirs of the late Dr. Falconer*, yet another and very useful paper will be found, written conjointly by that authority and Dr. Busk. I refrain here from detailed references to earlier works, such as those of Cuvier and Hunter, on the fossil mammalia of the Rock. For comparative purposes I find the *Reliquiæ Aquitanicæ* of Lartet and Christy invaluable. The volume by Rivière entitled *L'Antiquité de l'Homme dans les Alpes maritimes*, the *Collected Memoirs of Dr. Falconer*, and Mr. Peet's book on the *Stone and Bronze Ages in Italy*, are also of prime importance in this respect.

¹ The scantiness of fossils in the actual Rock itself has long been noted. Yet Mr. Frere pointed out to me such a fossil (apparently a nautilus) in a block of Gibraltar limestone forming part of the doorway of the Port and Treasury Office at the Grand Casemates Gate.

Rock.¹ Moreover, there is evidence that the filling of fissures in that agglomerate with bone-breccia containing the Pleistocene fauna had commenced before this submergence was initiated.²

A third possibility exists, viz., that this cave has been formed simply as a result of blocks of limestone becoming detached at the joints which traverse the rock in every part. This process of detachment is still going on in the cave. Should this view be adopted, no need exists for an appeal to former submergence of the Rock, to the extent suggested in the preceding paragraph.

For descriptive purposes, the cave may be conveniently divided into two portions. First, an outer part or vestibule, with a floor composed of solid rock covered with a minimum of sand and encumbered with brushwood. This part was not capable of excavation. Secondly, the cave proper, with an earth-covered floor which was subsequently excavated. A line drawn across the plan from K (Fig. 1) in a southerly direction will divide these two parts from each other. The first striking feature on entering the cave is the peculiar nature of the earth covering the denser parts of the floor.

This earth resembles nothing so much as snuff of a rich brown colour, and it is extraordinarily fine and flour-like in consistence. A fair proportion must be vegetable mould, and it is very likely that the guano of bats enters into its composition, although as noted above, the cave is not apparently inhabited by those animals at present. No doubt cave-earth of the usual kind is mixed with this brown powder, but the red tint of the cave-earth proper is masked by the darker colour of the vegetable mould. Deeper down, the character changes and in certain pockets, notably near A

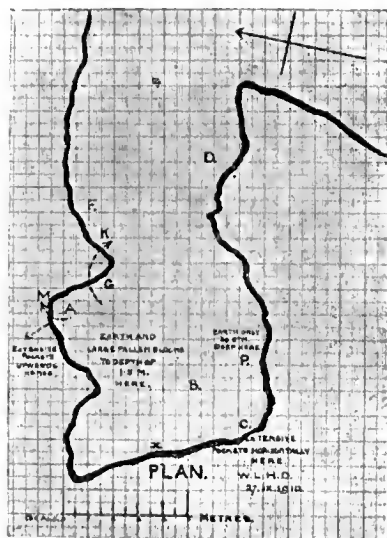


FIG. 1. PLAN OF SEWELL'S CAVE (CAVE S), GIBRALTAR.

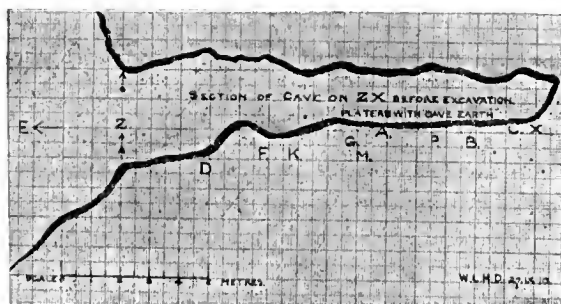


FIG. 2. SECTION OF SEWELL'S CAVE (CAVE S) ON XZ OF PLAN (FIG. 1).

in the plan (Fig. 1) and along the northern wall of the cave, a coarser but still powdery earth of a light brown tint replaced the superficial deposit. But, so far

¹ Ramsay and Geikie, *op. cit.*, p. 525.

² " " " " " p. 531.

as the excavation went, it may be stated that fine earth of one variety or another was found covering and surrounding on all sides the other contents of the floor to a depth of 4 feet 6 inches. If there be a stalagmite floor beneath this, it was not reached in the excavation. The remarkable dryness of the cave in the greater part of its extent has been alluded to, and this consideration throws some doubt on the existence of a stalagmite floor, although this point cannot yet be regarded as proven.

The second point attracting attention was a collection of small angular limestone fragments partially embedded in the brown earth of the floor, but quite easily discernible before any interference with the floor was undertaken. They formed a roughly circular patch measuring about two feet in diameter (*cf.* B in the plan, Fig. 1). Major Sewell recognised this as a common feature of the local caves. The appearance is strongly suggestive of a Neolithic workshop, the fragments representing waste splinters and chips. But as already remarked, the material is limestone, and though Professor Rivière has described implements of limestone from the Mentone caves¹ yet an application cannot be made to the present case without some investigation of the circumstances. Now it is clear that if these chips of stone are of the nature of "wasters," like those found in the case of flint manufactories, they should not now lie on the surface, unless the latter had been recently disturbed, and of this, no other evidence is forthcoming. A careful examination of the fragments is not productive of any encouragement of this explanation, nor is further evidence of their artificial origin provided thereby. I hold the view that the real nature of these fragments is that they are not artefacts, but that they represent the remains of a limestone block which fell from the cave-roof and then became disintegrated where it fell. This is not a mere hypothesis, for such disintegration has been described in other instances.² And in Cave S there is abundant evidence both that blocks fall from the roof and also that they may thereafter split up into much smaller fragments than those now under consideration. Finally, as will appear in the sequel, such undoubted implements as do occur are not of limestone, but of some other material.

A third point to be noticed before a description of the excavation is commenced, consists in the occurrence of numerous "pockets" and clefts, especially in the regions marked respectively A and C in the plan (Fig. 1). In the case of the part marked A, a fissure large enough to admit a man ran upwards and then turned somewhat spirally outwards from the cave. In this fissure some stalactites were found, but otherwise such formations were conspicuous by their absence. The fissure in question was filled with earth (containing a few bones) in its lower part only. The upper part was empty and freely accessible. Doubtless it owes its existence to the falling out of some blocks between joints in the solid rock; such rocks were afterwards found in the floor of the cave near this point.

Excavation was commenced (on Thursday, September 22nd, 1910), in the first

¹ *Cf.* Peet. *The Stone and Bronze Ages in Italy*, p. 39.

² *Cf.* Lyell, *Principles of Geology*, vol. ii, p. 227, 1833.

instance, at two points, viz., in the bays marked A and C on the plan (Fig. 1), and the adjoining pockets were carefully cleared out. Subsequently the earth was removed from the more central parts of the floor (towards B in the plan), and finally at P. It was evident that A is the deepest part of the cave and that the floor slopes down to this region from the other parts indicated in the plan, with the exception of G. In the latter situation a tunnel nearly large enough to enable a man to pass was driven through the earth beneath an overhanging prominence towards the point marked K in the plan. In the latter situation the earthy strata are shallow again, and near F (*cf.* plan) the brushwood of the outer part often encumbers the outer part of the cave. Near B and P little else than the cave-earth was found.

Upon removing the most superficial portion of the earth, bones were at once obtained, among the earliest being the left tibia of an adult man. It became evident that unless great care were taken bones would be fractured by the workmen as they stood in the soft mould; and so far as was possible, precautions were taken to guard against this. As the bones and other objects were brought to light they were collected in baskets or upon large sheets of paper, bearing an indication of the part of the floor that had yielded them. The bones from the pockets at C were easily identified afterwards for they were moist, whereas near A and towards B the bones were very dry.

Without entering into further details concerning the nature of the floor of the cave, a list of the excavated objects will be given in the next place. The list falls into subdivisions as indicated in the statement following :—

Classification of objects obtained from Cave S.

I. *Human Artifacts.*—

Pottery.
 Stone implements.
 Other stone objects.
 Shell armlet.
 Perforated *Cypræa*.
 Charcoal.
 Incinerated bone.
 Burnt stones.
 Bone implements.
 Bone splinters.
 Broken shells of *Purpura hœmastoma*.

II. *Mammalian Fauna.*—

Primates *Homo*.
Carnivora *Felis lynx*.

			<i>C. lupus</i> (wolf). ¹
			<i>C. vulpes</i> (fox).
			<i>Monachus mediterraneus</i> (seal). ¹
Ungulata	...	...	<i>Capra ibex</i> .
			<i>Capra hircus</i> (goat).
			<i>Rupicapra tragus</i> (chamois). ¹
			<i>Ovis aries</i> (sheep).
			<i>Bos taurus</i> .
			<i>Sus scrofa</i> (pig).
Rodentia	...	...	<i>Lepus cuniculus</i> (rabbit).
			<i>Mus</i> (? <i>rattus</i>).
			<i>Mus sylvaticus</i> with varieties (mouse).
			<i>Arvicola amphibius</i> (water rat).
			<i>Microtus</i> (? species, probably <i>agrestis</i>).
Insectivora	...	...	<i>Sorex ? araneus granarius</i> (shrew). Miller. ¹
Cheiroptera	...	...	<i>Vespertilio</i> (? species).

III. *Aves*.—

Vultur fulvus (vulture, not eagle, as previously stated).
Corvus or *Pyrrhocorax* (chough).
Columba livia (rockdove).
Turdus (? species; fieldfare or thrush).
Falco tinnunculus (kestrel).
Tetrao francolinus (francolin).¹
Sula alba (gannet).¹
Phalacrocorax carbo (cormorant).¹
Fratereula arctica (puffin).¹

IV. *Reptilia*.—

Monitor (? *niloticus*).¹
Testudo (? species; tortoise).
Gecko mauritanica (gecko).¹

V. *Pisces*.—

Thynnus thynnus (tunny).
Pagrus (? species; pagre).

VI. *Invertebrata*.—

A. *Mollusca*... ... *Purpura h mastoma*.
 Purpura lapillus.
 Trochus tessellatus.
 Cardium rusticum.

¹ Not previously recorded as occurring in the cave fauna of the Rock

Cardium (? species).

Solen vagina.

Patella (? species).

Pecten marinus.

Mytilus edulis.

Triton nodiferus.

Cypræa pyrum (cf. I, *supra*).

Cassia sulcosa.

Helix.

B. *Echinodermata* ... *Sphærechinus granularis*.

A few remarks will be offered on each of these objects, taken in the order of their classification.

I. *Human artefacts.*

Pottery.—The *pottery* consists of some twenty sherds of varying size and thickness derived from rounded vessels. The sherds are red or black in colour. Many are of such poor quality that the material crumbles between the fingers. There is no evidence of ornamentation, though some of the sherds are polished and many show signs of exposure to a fire. Having had the opportunity of submitting these objects to A. J. Wace, Esq., Fellow of Pembroke College, I am fortunately able to give his opinion, viz., that all the sherds are of a very primitive type, corresponding to the "proto-pottery" of other parts of the Mediterranean area. The clay is of very poor quality, but has nevertheless been baked. The ware is hand-made and hand-polished.

I may add that this ware is of the most primitive type so far discovered in the caves of the Rock. The sherds found by Brome were marked with a sort of primitive pattern or design.

Stone implements.—The mineralogical aspect may be considered first. Through the kindness of W. G. Fearnside, Esq., F.G.S., Fellow of Sidney Sussex College, I am able to make the following statement in this connection :—

Nos. 2, 3, 4 are quartzite (cf. Plate XLI, Fig. 1).

No. 5 is flint.

Nos. 6, 7, 8 and 9 are of chert.

Nos. 12 to 17 inclusive are most probably of silicified sandstone (cf. Plate XLI, Figs. 3 and 7).

No. 19 is a very delicate blade of flint (cf. Plate XL, Fig. 4, No. 2).

Coming next to the archæological characters of the stone implements, I am enabled, through the kindness of Baron A. von Hügel, to report as follows :—

In general, the implements resemble those found in caves elsewhere. No. 2 is the most characteristic in this respect. In particular, one (No. 7) (cf. Plate XLI, Fig. 2) resembles part of an implement found in Kent's Cavern and figured by Evans (*op. cit.*, p. 498, Fig. 391), by whom it is compared to the type of Solutré

(Palæolithic). No. 15 (*cf.* Plate XLI, Fig. 2) is also a scraper of a type found in Kent's Cavern (*cf.* Evans, *op. cit.*, Fig. 397). No. 13 (*cf.* Plate XLI, Fig. 2) is a scraper. When complete the form of this implement was probably triangular (*cf.* Evans, *op. cit.*, Fig. 212).

In addition to these remarks by Baron von Hügel, I venture to make the criticisms following. Some of the implements appear distinctly Palæolithic. No. 2 (a quartzite implement) approaches the Mousterian type, and much resembles some quartzite implements described by me in the *Quarterly Journal of the Geological Society* (vol. li, 1895). These were obtained from a cave in the Creswell Crags, Derbyshire, associated with bones of rhinoceros, bear, hyena, and reindeer.

Dr. Sturge has kindly examined the implements from Cave S, and he considers that Nos. 2, 7, 13, are of Mousterian type, while No. 15 is either Mousterian or early Aurignacian in type.

Lastly, I find these implements from Gibraltar agree closely with some of those obtained in the Cro-magnon Cavern at Les Eyzies (*cf.* especially *Reliquiæ Aquitanicæ*, Pl. XX, Figs. 2, 6). The very delicate flake, No. 19, bears a bulb of percussion on its unworked surface, and its slenderness indicates that the maker had attained a fair degree of skill in his art. But the absence of any example of the great massive flints of the St. Acheul and Chelles types is to be remarked.

Stone objects other than implements.—Turning to the remaining stone objects, we notice that the large flake, No. 1 (*cf.* Plate XLI, Fig. 3), is considered by Mr. Fearnside to consist of a metamorphic rock allied to quartzite. It is remarkably like a quartzite implement from the Robin Hood Cave in Derbyshire figured by Evans (*op. cit.*, Fig. 413A, p. 522). No. 10 (*cf.* Plate XLI, Fig. 3) is a rounded mass resembling the "hammerstones" described by Evans (*op. cit.*, Fig. 402, p. 503). No. 11 (*cf.* Plate XLI, Fig. 1) is a cuboidal block of very heavy hæmatite. It leaves a faint trace on unglazed porcelain, but is too hard to have served as a source of cosmetic pigment. It is possible that this block was used as a "sling stone," for which purpose its great density is well adapted. No. 12 (*cf.* Plate XLI, Fig. 3) is a mass of silicified sandstone, doubtless the core whence chips similar to Nos. 13 to 17 inclusive were derived.

To sum up the foregoing description, I would say that Nos. 2 (quartzite), 7 (chert), 13, 15 (silicified sandstone closely resembling chert), and 19 (flint) are the most striking specimens. The general indication is that the art of fabricating such objects had reached a fair though not a very high standard, and although some of the implements are of Palæolithic, *i.e.*, Mousterian form, they may be attributed to a low stage of Neolithic culture. The irregularity of their distribution makes the task of subdividing them according to their position an impossible one. The absence of polished implements is the more noteworthy inasmuch as such objects were obtained in other caves at Gibraltar, and in surroundings closely resembling those considered here. The materials are variable, and some, *e.g.*, the hæmatite, must have been brought from a considerable distance.

Shell armlet.—A portion of a shell armlet (*cf.* Plate XL, Figs. 4 and 5) exactly

resembles a fragment found by Captain Brome in the Genista Cave, No. 1, and figured by Busk (*Transactions of the International Congress, etc.*, Pl. VIII, Fig. 1). Mr. Wace tells me that such armlets occur in Neolithic sites in the Ægean area, and also in Egypt.

Perforated shell.—A single example of a Mediterranean cowrie, *Cypræa pyrum*, was found. It is remarkable on account of an artificial perforation at one end (*cf.* Plate XL, Figs. 4 and 5). This is the only object found that represents an article used for personal decoration. We may further note that perforated shells of *Cypræa pyrum* occurred at Cro-magnon, as well as in the Mentone Caves of Baoussé-Roussé. (*Cf.* Evans in *Rel. Aq.*, p. 179, for Cro-magnon, where the shell was in the fossil state; and Rivière, *op. cit.*, Pl. XXI.)

Charred or burnt objects.—Masses of charcoal occurred throughout the thickness of the cave-earth, but nowhere in great abundance. In addition to this, several charred fragments of bones of goats and one vertebra of a tunny (fish) were found, as well as a few blackened splinters of limestone.

Bone implements.—Such implements occur in other caves in the Rock, but in the present instance, only three doubtful examples can be mentioned. These are metatarsal bones of a young goat, and their rounded surface appears to have been modified by attrition, as though they had been used for polishing or rubbing. However this may be, their form is now prismatic and not cylindrical or oval in section. I have found no record of comparable examples elsewhere.

Bone splinters.—As in all excavations, splinters of bone are extremely numerous. But they own very different origins. A few are doubtless due to the picks and other implements used by the workmen in their excavation. Others are referable to the action of fire, and are easily recognisable by their partially incinerated condition. Some may be due to atmospheric action, for I find at least one beautiful example (metatarsal bone of goat) of a bone split longitudinally, the two fragments being kept close together by a mass of chalky limestone which fills the narrow cavity completely and protrudes on each side along the lines of fracture.

It is to be noticed that whereas by far the greater number of bones of all kinds are referable to the goat (*C. hircus*), in only a single instance was a complete and perfect bone of that animal obtained. Many fragments bear the marks of teeth, naturally those of the carnivorous animals associated with these ungulata. But many other fragments seem to have been split by human agency.

In vain I have sought for such bone splinters as might be described as "implements." Equally fruitless has been my search for any carving, engraving or perforation of the bones.

Shell fragments.—The list of specimens (*q.v.*) shows that numerous shells of mollusca occur. Naturally many of these are fragmentary. In the present connection, I would draw attention to the fact that the examples of *Purpura* are few in number, not more than about half a dozen in all. Of these specimens three (*cf.* Plate XL, Fig. 3) present a remarkable appearance. The apex of the shell has

been broken in each case, but in addition, a large aperture has been made lower down and opposite the mouth of the shell. All three shells agree in this. Moreover they are in accord herein with the *Purpura* shells obtained in such numbers at Sidon from the ancient refuse heaps near that port. The Rev. A. H. Cooke believes that the peculiar fracture indicates that the mollusc was used for the preparation of its distinctive product, the Tyrian "purple." This ingenious suggestion is founded upon a knowledge of the anatomy of *Purpura*, and therefore I have ventured to mention these three specimens in this connection.

II. *Mammalian fauna.*

Man.—The human bones (Plate XLIII, Fig. 3) are referable to a single individual, evidently an adult male of powerful physique, and of stature approximating to 1650 mm. (5 feet 5 inches). (From Pearson's abacus, using the length of the right tibia, *cf.* Pearson, *Phil. Trans. Roy. Society*, vol. xei, A, p. 169.)

The bones are heavy and must still contain a considerable proportion of organic matter. Their appearance in this respect need not contra-indicate a very considerable antiquity. They conform precisely to the description given by Busk (*cf. Transactions of the International Congress*, p. 147) of human bones found in the Judges' cave (Glen Roeky) associated with bones of an ibex.

The actual specimens found comprise those in the following list (*cf.* Plate XLIII, Fig. 3):—

- (a) Vertebrae. *C.* 7, *Th* 1, 3, 5, 10, 12, *L* 1, 2, 3, and part of the auricular facet of the right side of the sacrum.
- (b) Ribs. No. 1 of the right side. Eleven other fragments principally of the larger ribs of each side.
- (c) Part of the right scapula and acromial part of the left clavicle.
- (d) Right scaphoid bone of carpus. All metacarpals (save No. 1) of right hand, and metacarpal No. 4 of left hand. A few phalanges of the fingers.
- (e) A large portion of the right innominate bone with three fragments of the same or of its fellow of the left side.
- (f) Right fibula, both patellæ, tibiæ, and astragali.
- (g) Right navicular bone of foot, left entocuneiform bone. All the metatarsal bones (right and left) except No. 4 of the right foot. A few phalanges of the toes.

In the first instance, the wide dispersal of these bones in the cave earth must be mentioned. No two bones were in their natural relation; touching the left clavicle was a bone of the left foot. The tibiæ were about 6 feet distant from each other. Some bones were deeply embedded beneath overlapping rocks. A phalau

bone of a finger was found at the spot marked K, where few other bones occurred. No fragment of skull,¹ arm bones or thigh bones could be found.

In spite of this dispersal, the characters of the bones enable me to refer them confidently to one and the same skeleton. Some of the inferences to be drawn from their study will now be set out in detail, commencing with the bones of greatest importance for this purpose.

Os innominatum (Plate XLIII, Fig. 3).—The sex of the individual is clearly shown by this bone to be male. No features of inferiority in the form of the bone can be detected. The consolidation of the bone indicates the full maturity of the skeleton.

Tibiæ.—The most striking features are the massiveness and the "inflected" form of these bones (Plate XLIII, Figs. 1 and 2). These characters recall the tibia of the Palæolithic cave-man of Spy in Belgium. But a more careful examination convinces me that this similarity cannot be pressed. For in another and very important character, the resemblance is not maintained. I am therefore obliged to qualify the statement on this subject as given in my preliminary report (*cf. The Gibraltar Chronicle*, October 15th, 1910), and to remark that the similarity is noticed in two features only.

The divergent character in question is that known as platynemia, or flattening (in the transverse direction) of the tibial shaft. This character is very pronounced in the human tibiæ from Cave S (*cf. Plate XLII, Fig. 2, GIB.*)

The appearance may be due to one or more of several factors, and the specimens thus characterised can be classified according to the factor which has been most influential.

In the present instance, that factor is an osseous ridge, known as the ridge of the posterior tibial muscle (*M. tibialis posticus*), which has been drawn out in these tibiæ, so as to project very markedly from the hinder service of the shaft. In other examples, the ridge of the soleal muscle (also posterior in situation) is prominent, and in others again, neither of the above ridges, but an anterior ridge may be unduly exuberant in growth.

It is interesting to note that the ancient cave tibiæ from Perthi-Cwaren (described by Busk and Boyd Dawkins, *cf. Boyd Dawkins, Cave Hunting*, p. 173) are in the latter category. Hypertrophy of the soleal ridge is well shown in a modern tibia from the Cambridge Dissecting Room. A section of this tibia is shown in Plate XLII, Fig. 2. Finally the tibiæ from Cave S are very distinctly associated, not with the Spy tibia, but with the tibia of the skeleton found at Cromagnon in the Dordogne district. And it is important to note that other tibiæ from the Gibraltar caves described by Busk (*cf. Boyd Dawkins, op. cit.*, p. 175) agree with those now under consideration.

The foregoing characters can be recorded in a numerical form by the employ-

¹ *Cf. Lyell's remarks (Antiquity of Man, p. 63) on the apparently capricious preservation of different parts of the human skeleton, as exemplified by the remains found in the Belgian caves explored by Schmerling.*

ment of an index expressive of the ratio between the two axes (*viz.*, the transverse and the antero-posterior) of the tibial shaft, measured at the level at which the soleal line merges into the internal ridge of the bone. The values of these indices, together with the other measurements of the bones, are given in the accompanying table.

Tibiae from Cave S, Gibraltar.

Right tibia I.—Length excluding spine	370 mm.
[<i>Cf.</i> ¹ Cro-magnon tibia	378 mm.

II.—Angle of retroversion of head (Plate XLII, Fig. 3):

Mean of three determinations	16° 15'
[<i>Cf.</i> Tibia of Spy No. 1	18° 0' (Fraipont). ²
<i>Cf.</i> Tibia of Spy No. 1	13° 0' (Klaatsch) ³
„ „ Aurignac man (mean)	17° 30' „
Right tibia	19°
Left tibia	16°
„ „ neolithic men (mean)	12° 30'
maximum	14° ⁰²
„ „ modern men (mean)	6° 30'
maximum	12° ⁰²]

III.—Index of platytenemia (Plate XLII, Fig. 2):

Mean of right (58·75) and left (60) tibiae	59·3
[<i>Cf.</i> ¹ Cro-magnon tibia... ..	61·0
³ Spy No. 1, tibia	70·7
³ Tibia from Moustier	87·1
⁴ Modern tibiae (French)	88·0]

Returning to the subject of the “inflected”⁵ character of these tibiae (Plate XLII, Fig. 3) it will be seen from the angular measurements given in the

¹ From measurements of the cast of the bone, W. H. L. D. There is an erious uncertainty about the exact origin of this cast. It accompanies the casts of the cranium and femur of the “old man” of Cro-magnon in the Cambridge Museum. But I find from Broca's report in the *Reliquie Aquitanicae* that the tibia of the “old man” was imperfect (*op. cit.*, p. 103, and Plate cvi). However, the measurements of the thickness of the shaft agree in the cast with the description in the work cited. On the other hand, the length of the cast agrees with the dimensions of the Madelaine tibia recorded by Hamy on p. 270 of the *Reliquie Aquitanicae*, and figured in Plate CX of that work.

² Fraipont, *Revue d'Anthropologie*, 1887.

³ Klaatsch, *Zeitschr. für Ethnologie*, vol. 42, p. 553, 1910.

⁴ Manouvrier, *Bull. de la Soc. d'Anthr. de Paris*, Tome X, 1897.

⁵ Otherwise called the “recurved” or “retroverted” character.

table that this feature distinguishes them from those of modern men, while allying them with those of prehistoric human beings.

A careful investigation of the upper articular surface of these tibiae does not provide me with any further occasion for comment. But at the opposite end of the bone (for the right bone only is sufficiently complete to yield this information) a character of inferiority is very evident (Plate XLII, Fig. 4). In this situation the lower articular surface sends a tongue-like projection upwards on to the anterior aspect of the bone. Such a localised prolongation of the articular surface is known to characterise the skeletons of men who habitually adopt the "squatting" attitude. Accompanying this, a corresponding extension (or sometimes an islet of articular surface) is found on the adjacent aspect of the astragalus; and both astragali are thus marked in the present instance. (This subject has been investigated by Sir Havelock Charles, and by Professor Arthur Thomson.)

In passing to other bones from the tibiae, it is advisable to note that in these very distinctive elements of the skeleton of the lower limb, the human individual from Cave S is found to resemble other prehistoric examples in three definite characters, while agreeing in yet another respect with the more lowly varieties of existing mankind. This is the most important outcome of the examination of these human remains.

Fibula.—This is a stout bone of the right lower limb, measuring 357 mm. in length. Beyond deep channelling for the peroneal muscles, it presents no special features of note. Herein it agrees with the fibula of skeleton "No. 1," from Cro-magnon (*cf.* Broca in *Reliquiæ Aquitanicæ*, p. 110, and Plate C vi in that work). The rarity with which the fibula is preserved, as compared with the tibia in the Gibraltar caves, has been noted by Busk (*cf.* *Transactions International Congress*, p. 160).

Astragalus.—Both were found. The most important character is the articular facet on the outer portion of the upper surface of the "neck" of the bone (Plate XLII, Fig. 1). To the inside of the "neck," the non-articular isthmus between the articular areas of the head and upper surface respectively) is remarkably narrow. Beneath this isthmus, the articular area of the head is continued unusually far backwards. The fibular facet is very extensive, as in the skeletons from La Chapelle and La Quina.

Navicular bone of the Tarsus.—The right bone only was found. The only features demanding notice are the almost quadrate outline of the astragalar facet, and the extension of the anterior articular area outwards to beyond the ectocuneiform surface, so as to provide for articulation with the cuboid.

Entocuneiform.—(*Cf.* Plate XLI, Fig. 5, No. 1). Only the left bone was found. The prolongation of the metatarsal facet inwards is hardly beyond the range of normal variation in modern bones. The dorsi-ventral axis of this facet is very nearly rectilinear, not curvilinear, with an internal convexity as in the case of the lowly human races. The illustration (Plate XLI, Fig. 5) shows this bone (No. 1) in association with the corresponding bone from the skeletons of an aboriginal native of Australia (No. 2) and a chimpanzee (No. 3) respectively.

Metatarsals.—Only the first metatarsal will be described. The bones from both feet were found. The proximal end (in each bone) bears a facet concave from side to side but not more so than in most modern instances. In neither bone does a facet for the second metatarsal appear. The left bone has a remarkable perforation in the shaft at its outer side. The appearance seems to point to an artificial origin, and a vascular foramen of such large size was not seen in any of some twenty-five modern bones examined for the purpose of comparison. On the whole, however, in consideration of the fact that a vascular foramen of small size normally occurs here, it is judged that the present large aperture is of that nature and is not artificial.

Patella.—Both bones were found. They present no characters of inferiority. The inferior tubercle is well marked and gives each bone a somewhat triangular contour.

Ribs.—Some of the fragments are remarkably deep, one (from the right side) measuring as much as 22 mm. This character is in correlation with the general massiveness of all the bones.

Clavicle.—Judging from what remains of the left clavicle, this bone was of slight proportions in comparison with the rest of the skeleton. The chief interest of this observation lies in the fact that a similar disparity characterises the palaeolithic men of Krapina in Croatia. (It may be added that among the great anthropoid apes, the Gorilla is similarly distinguished from the Orang-utan, which has relatively large clavicles.)

The remaining bones (*cf.* List) call for no special comment.

Carnivora (Felix lynx).—This form is represented by the left half of an adult mandible.

Canis lupus.—The wolf has not been recorded previously as occurring in the cave fauna of the Rock.¹ It is here represented by two metatarsal bones and part of a humerus. All these are adult and were found widely separated.

Canis vulpes.—This identification depends on a single vertebra from a young individual. It is not impossible that the bone may be that of a young wolf.

Monachus mediterraneus (the hooded seal).—This animal has not been identified previously in the Gibraltar cave fauna. Here it is represented by parts of two individuals, one adult and the other immature. Its presence in a cave 800 feet above sea-level can be accounted for only on the supposition that man (or a bird of prey) introduced the bones. The rarity of remains of seals in association with prehistoric human remains is somewhat surprising. (Up to 1900, only one instance seems to have been recorded in Europe. But seals are depicted on some of the prehistoric carved bones.) I may add that the determination of the particular seal found in Cave S is undoubted, since it possesses but two upper incisor teeth on each side, differing herein from its "Arctic" congeners. Among

¹ Boyd Dawkins (*op. cit.*, p. 372) is apparently mistaken in his statement regarding this animal. At any rate, no confirmation can be gleaned from Dr. Busk's paper in the *Transactions of the Zoological Society*, vol. x. Indeed, the absence of bones of the wolf is there commented upon.

the fragments found, a left upper premaxilla fortunately came to light, thus clinching the diagnosis.

Ungulata (Capra ibex).—Two individuals are represented. The determination rests upon the evidence of the limb bones (*cf.* Plate XLIII, Figs. 4 and 5). I would remark again that the larger individual is further noteworthy, inasmuch as the bones seemed to be disposed to some extent in a natural sequence or order. They were covered by about 3 feet of cave-earth.

Capra hircus.—The goat occurred in very great numbers, as usual in the caves of the Rock. The smaller size of the bones (*cf.* Plate XLIII, Figs. 4, 5) distinguishes them from those of the larger ibex. It is not too much to say that hardly a single bone of this animal (goat) was obtained unbroken. A majority seem to be immature, the epiphyses having become separated from the long bones. Among the immature examples are some of very small size, and to these remains it is really only possible to assign the general term "capra." In sorting the bones, I have regarded nearly all such indeterminate specimens as belonging to these species. A few seem to be more like bones of sheep.

Rupicapra tragus.—The chamois is now recorded for the first time. But the determination rests on the evidence of a single bone (*cf.* Plate XLIII, Fig. 5, No. 1). This specimen, a metatarsal bone, gave much trouble in identification, the choice lying between the sheep (*Ovis aries*) and the chamois. Had I only possessed access to the bones of modern "domestic" sheep, I should have unhesitatingly labelled the present specimen as "chamois." But the ovine species vary considerably, and a sheep from the peat of the fens is very different from a modern Shropshire ewe. However, after careful comparison, I am confident that the bone in question resembles the corresponding bone of the chamois more closely than it does those of the sheep at my disposal. The point is not unimportant, for should the former existence of the chamois on the Rock be established, an indication of somewhat colder conditions is hereby provided.

Ovis aries.—Represented by a few bones of immature individuals, not certainly distinguishable from goats.

Bos taurus.—As recorded by Busk, individual animals of this species are found of very varying dimensions. In the present instance the bones are few and fragmentary. At least one specimen looks quite recent, and it may have been introduced by a raptorial bird.

Sus scrofa.—A few bones, including the left half of an immature mandible, were found: they denote animals of small size, as judged by that of the modern boar, or domestic swine, and they agree in this respect with the specimens described by Busk.

With the exception of the bones of *Bos taurus*, all the foregoing specimens seem to have been long embedded in the cave-earth, which has stained them deeply. The bones of the larger ibex are spotted in a manner exactly reproducing the appearance of the ibex bones from Gibraltar, figured by Busk (*Transactions of the Zool. Soc.*, vol. x, Plate XXV) and assigned by that writer to the Pleistocene epoch.

Rodentia (Lepus cuniculus).—The rabbit is represented more numerous than any other animal, not even excepting the goat. No bones can be referred to the hare (*L. timidus*).

Mus sp. ? *rattus*.—Identified by the form of the teeth and of the *os innominatum*.

Mus sylvaticus.—Remains of a mouse were plentiful, and are distinguished by the dental characters from their larger congeners. But the mandibles referred to the sylvan mouse vary in size. One example especially (Plate XLI, Fig. 4, No. 6) is rather larger than the rest. The cheek teeth together measure 4 mm. in length. The "anterior accessory cusp" of the first cheek tooth is but feebly indicated. In the foregoing respects, this mandible differs from those of *M. sylvaticus*, and agrees with an allied species, at first called by Mr. E. T. Newton *M. abbotti*, and later (*cf.* Newton, *Proc. Zool. Soc.*, 1899, p. 381) *Mus lewisi*. It occurred in a chalk fissure at Ightham in Kent (*cf.* Newton, *Quart. Journ. Geol. Soc.*, vol. 1, 1894, p. 195). I must lay upon Mr. Newton's shoulders the responsibility for this species, but the observations mentioned above may be held to provide additional confirmation of the differences upon which its segregation is based. It must be added that Mr. Hinton does not recognise a distinct species in this form.

Arvicola amphibius.—No teeth were discovered: the determination rests on the characters of certain *ossa innominata*.

Arvicola or *Microtus* (? species).—A second species of *Arvicola*, probably the field-vole, is represented by numerous *ossa innominata*. (Plate XII, Fig. 4, No. 8.)

Insectivora (Sorex).—Two or three mandibles of the shrew were found (Plate XLI, Fig. 4, No. 7). This seems to be the second record of the occurrence of a shrew in Spain (*cf.* Miller, *Magazine of Natural History*, November, 1910, p. 458).

Chiroptera.—Only one bone (a humerus) of a bat has been recognised. The bone is that of a small animal (Plate XLI, Fig. 4, No. 2).

III. *Aves*.

The corvine remains almost certainly comprise those of the chough (*Pyrrhocorax*); they are abundant, as at Les Eyzies (Cromagnon), and elsewhere in cave deposits.

The francolin. The occurrence of this bird (which is allied to the partridge) is interesting, for it has long been extinct in Spain, although still inhabiting Cyprus and the countries eastward of that island. (*Cf.* Newton, *Dictionary of Birds*, Part I, art. "Francolin," and Florio.¹)

The cormorant is represented by a single fragment, the hinder part of the skull. Two bones only of the gannet were found, but are absolutely distinctive.

The puffin. The bones may possibly be those of the shearwater (*Puffinus*

¹ "Francolina, a dainty bird called a goodwit. Some also take it for a moor hen, others for a pheasant pout." Florio's *Italian Dictionary*, 1598.

major), but my comparative material does not enable me to pronounce definitely on this point. The shearwater occurs abundantly in the caves of Corsica Lydekker, *P.Z.S.*, 1891, p. 467).

IV. *Reptilia.*

A large reptilian jaw accords better in its characters with *Monitor niloticus* than any other form at my disposal for comparative purposes. But this reptile has not been previously recorded on the Rock, so far as I know.

The tortoise, probably *Testudo graeca*, is represented by a humerus only (Plate XLI, Fig. 4, No. 1).

The gecko is found at the present time near Algeciras, but I do not know of a previous record of its presence on the Rock.

V. *Pisces.*

These require no special comment, both forms existing at present in the neighbouring sea.

VI. *Invertebrata.*

A. *Mollusca*.—All the forms discovered in the cave have been recorded previously, either from the Gibraltar caves or from Mentone.

It has been remarked above that *Cypræa pyrum* occurs at Cro-magnon and at Mentone in cave deposits. The shell *Cassis sulcosa* has been found at Les Eyzies (*cf.* Evans in *Rel. Aq.*, p. 179) and in the Mentone caves (*cf.* Rivière, *op. cit.*, Pl. XIV).

The limpets and mussels occur in the greatest abundance, and were evidently the favourite or most easily procurable food of the inhabitants of the cave.

B. *Echinodermata*: *Sphærechinus granularis*.—This species is found at present in the vicinity of the Canary Islands. I have no note on its occurrence in caves or kitchen-middens.

B. SUMMARY AND CONCLUSIONS.

I will now attempt to summarise the results of the observations made in the course of the excavations described in the first part of this communication.

Regarding the Rock of Gibraltar as a field for future research into the early history of mankind, I am strongly impressed with the importance and the probable fertility of this source. I do not think the caves and other formations by any means exhausted, and I am confident that we have so far reaped but the first-fruits of an abundant harvest.

Passing from matters of opinion to those of fact, it is a pleasure to record the very keen interest now manifested in these matters by those on the spot, whether they be officers of the various Services of the Crown, members of the Civil

Administration, or residents. At no previous epoch have circumstances been so favourable for the acquisition and preservation of such evidence as we seek.

The actual field of operations is three-fold at least, and possibly additional lines of work remain to be recognised and undertaken.

I. *The Bone-breccia of the great agglomerate of Buena Vista.*

Dealing with the literature, material, and observations at my disposal, I find first a series of problems connected with what may be termed the true "bone-breccia," as exemplified by that of Rosia,¹ now so largely removed. This bone-breccia formed the matrix whence the fossil mammals described by Dr. Busk in 1879 (*Transactions of the Zoological Society*, vol. x) were derived. It occupies fissures in the "great agglomerate" of Buena Vista. Dr. Busk has not assigned any human remains to contemporaneity with those animals. Nor have any human bones (discovered since that account was written) yet been associated with them. The animals constitute what may be termed the Pleistocene fauna of the Rock.

For various reasons, my own work on the spot has not been extensively directed to this breccia.² In a survey such as this I am perhaps justified in adding a few more remarks on this matter. In regard to future research, the excavator will possess a great advantage denied to Dr. Busk at the time of writing, though not perhaps at the time of publishing his account in the *Zoological Transactions*.³ I refer to the report (so frequently mentioned in the descriptive part of this communication) on the geology of Gibraltar, by Professors Ramsay and Geikie. These authorities have produced a masterpiece of lucidity, which contributes enormously to a precise knowledge of the geological history of the Rock, and of its relation to its surroundings, including the African shore of the Straits. No conclusions will in future command attention should they neglect the geological evidence so clearly set forth in that report.

II. *Problems relating to Forbes' Quarry and its surroundings.*

We come now to the second division of the subject. This comprises the problems centred in Forbes' Quarry. In the foregoing pages I have explained that the interest is divided here between the "brecciated talus" and the cave (or caves still to be discovered) in relation thereto.

Taking the cave first, I can only repeat in the sense of my preliminary report that even at the risk of obtaining no animal remains, it was impossible to proceed until the characters of the cave-floor had been ascertained. This exploration has now been accomplished.

¹ A corresponding bone-breccia was found in relation to fissures on Windmill Hill, and in the Genista Cave No. 1.

² See, however, Appendix IV.

³ Dr. Busk published his paper in 1879, but he must have worked on the material for years before the date of publication. The report of Professors Ramsay and Geikie appeared in 1878.

The brecciated talus remains for consideration. We have seen that Dr. Busk referred the Forbes' Quarry skull to the superficial layers of this material. The reasons for specifying a superficial rather than a deeper zone are not given, save that the presence of sand on the specimen is mentioned.¹ But sand occurs sparsely throughout the brecciated talus. Let us for a moment consider the nature of the latter.

This is an "agglomerate." But it is not identical with the "great agglomerate" of Buena Vista (which, we have seen, contains in fissures a bone-breccia with a Pleistocene fauna). Thanks to the report of Professors Ramsay and Geikie, a novice can now learn how these two varieties of agglomerate are distinguished from one another.

The agglomerate as seen at Forbes' Quarry is less dense than that of Buena Vista. So far as is known, it contains no fissures filled with bone-breccia of the type found at Rosia and in the lowest levels of the Genista caves. It has not been deeply submerged like the great agglomerate, although my discoveries of marine molluscs help to confirm the view of its partial submergence, or that it was formed partly below water. But to all appearance submergence was not extensive, nor was it in time prolonged sufficiently to yield evidence of the consolidation and submarine erosion characteristic of the great agglomerate, but not found here.

It differs in regard to the substratum. The great agglomerate lies on shales (referred to the secondary period). But beneath the "later agglomerate," the next strata where visible are usually composed of sand with pebbles (the latter of limestone). Thus Professors Ramsay and Geikie described a shallow layer of sand with pebbles visible immediately below this later agglomerate at the "Prince's Lines." This is close to Forbes' Quarry, but nearly 100 feet higher above the sea.

Nevertheless the geologists surmise that similar relations and material will be found at the "King's Lines," which are adjacent to Forbes' Quarry and nearly upon the same level.

So far as Forbes' Quarry is concerned, I can adduce from my own observations only the sand-zones in the floor of the cave. These were admittedly non-fossiliferous, or practically so. Yet their small extent (although consolidation due to stalagmite formation in the cave made their exposure quite disproportionately difficult) goes far to discount any conclusion based upon this defect.

The importance of discussing the substratum of the brecciated talus or later agglomerate depends upon the fact that Professors Ramsay and Geikie detected mammalian bones in the sandy layer they describe in that position at the Prince's Lines. But the nature of those mammals has never been revealed. Here is a problem awaiting and inviting an immediate attack. In future investigations of the brecciated talus at Forbes' Quarry, I believe the proper plan of campaign would be to expose the substratum. If, as the geologists forecast, the sand is present as a distinct, even though shallow layer, it may contain mammalian bones here as at

¹ Cf. also Sera, *op. cit.*, *Archivio, etc.*, vol. xxxix, 1909, pp. 15, 16.

the Prince's Lines. It will not be forgotten that the Forbes' Quarry skull was encrusted with sand. Even a shallow zone of sand provides better chances for the preservation of fossil bones intact than do the innumerable angular fragments of which the brecciated talus is composed.

But I would add that the exposure of this underlying sandy stratum may involve work outside the Quarry altogether, and (if possible) at the back of the adjoining buildings which face N.E. on the Devil's Tower Road.

Similar considerations render it expedient that a watch should be kept on the progress of the work of removing the sand and gravel immediately to the east of these buildings (*cf.* p. 354) and on any operations near the King's Lines.

III. *The more recent cave-deposits of the Rock.*

The last subdivision of the subject comprises the caves and their contents so far as these are related to period subsequent to the disappearance of the Pleistocene fauna. At present, the human remains are referable with certainty to this and to no earlier period in the history of the Rock.

The contents of the second cave explored by me have reference to this period. The material, as explained in the descriptive portion of this paper, falls naturally into three subdivisions.

Of these, the first includes such traces of human activity as pottery and stone implements. The characters of these objects indicate that during the whole period of occupation by human beings the state of culture was at a lowly level. The earthenware is distinctly Neolithic in its relations, and indeed of an early type. The implements cannot be justifiably separated from the pottery, even though some are of Mousterian, *i.e.*, of Palæolithic type. The ornaments, too, are of the simplest description, *viz.*, the perforated *Cypræa*, and the shell anklet described above.¹ The total absence of polished implements and of any trace of metal is important. Polished implements and metal objects occurred in the Genista caves. The inference is that the prehistoric inhabitants of the Rock in other but adjoining habitations, passed to a higher stage of cultured evolution than those whose handiwork we are now considering. In view of the inaccessibility of Cave S, it may well have been abandoned early in the Neolithic age, perhaps after the death of an occupant. This is merely a surmise, but I may add that, taken as a whole the general aspect recalls that of the earlier settlements at Cro-magnon, as depicted in the graphic pages of the *Reliquiæ Aquitanicæ*. But we have part only, not the whole of that picture. But then we have literally not got to the bottom of the matter, for my excavations, though extending to the depth of a metre and a half in the deepest part of the cave-earth, failed to attain the bed-rock. It is by no means improbable that deep in the corner marked A on the plan (Fig. 1 in the text), still richer treasures await a more fortunate excavator.

¹ A special search for artificially perforated phalanges of *Ungulata*, similar to those found at Les Eyzies, was unsuccessful.

To the best of my judgment, the material of the artefacts appears to be local. Certainly the silicified sandstone and chert occur on the Rock, sparingly no doubt, but still undoubtedly. An exception must be made in the case of the heavy block of hæmatite ore, but with this exception the objects reveal, as already mentioned, a settlement of human beings in the lowliest circumstances, comparable to those of the kitchen-middens.

We now come to the evidence of the human bones. It is inadvisable now-a-days to lay stress upon the characters of an individual, yet in this case the lines of evidence are so convergent that a few remarks seem justifiable. The evidence is provided by the fibula, the astragalus and the tibia. Of the first two bones, each bears a character found with unwonted frequency in Neolithic skeletons as contrasted with its rarity in those of modern Europeans.

The tibia provides no less than three perfectly definite characters distinguishing it from the normal type of the modern bone. They associate it with Neolithic tibiæ, and the tibiæ of such of the existing human races as are capable of habitually adopting the attitude of "squatting." I may note that of these characters, one only (*platynemia*) has been remarked before in the cave-bones of the Rock. A second (retroversion of the tibiæ head) is present in a high degree. The third has been less studied in the history of cave-exploration so that a word may be added on this subject here. The character in question is the upward extension of the inferior articular surface of the tibia, forming an upwardly directed lappet or facet of articular area on the front of the lower part of the tibiæ shaft. The Spy and Cro-magnon tibiæ lack this facet, but other Neolithic tibiæ possess it with great constancy.

In Crete I obtained six tibiæ from a Neolithic cave-shelter at Agios Nikolaos (Sitia). All these tibiæ possess the facet in question.

Such evidence makes strongly in favour of assigning the human bones from Cave S to the Neolithic period; in fact, to that denoted by the pottery. As regards other circumstances in connection with the human bones, I think the evidence on the whole runs against a theory of deliberate interment. The condition of dispersion in which the bones were found is antagonistic to such a view. That the individual lost his life through the fall of a massive block from the cave-roof is by no means unlikely. Our failure to find the least trace of the cranium might be explained if that part of the body had been crushed at the time of death. The dispersion of the various parts still remains obscure, and one is perforce thrown back on an appeal to the action of wild animals in this connection. It must be admitted that the human bones are singularly devoid of traces of gnawing; and herein present a marked contrast with the remains of goats.

Lastly we come to the associated fauna. Certain factors have to be taken into consideration here. The presence of raptorial birds will account for a proportion of the remaining animals. To the credit of these winged carnivora must be placed most of the bones of smaller birds, the majority of the rabbits and some of the young goats, with a few at least of the small rodents. The mollusca and echinus,

a large proportion of the goats and probably the seals¹ owe their presence (in a cave 800 feet above the sea) to human agency.

The extraordinary confusion of the remains has been noted already. On this account I regard the accumulation as a sort of cave kitchen-midden. Turning to the significance of the list of animals of all kinds actually represented, there is but little to add. The fauna is the prehistoric one, and while I have been able to add some new names to the earlier lists, the character of these has not been materially altered. I was careful to sift this evidence with all the care at my disposal, on the general ground that some significant form may be represented by a single bone, and this may indeed be the case with the chamois, and certainly is so with the tortoise and (?) monitor. But a more particular reason was that Major Sewell tells me that, some years ago, remains of an "Arctic rodent" were discovered in a neighbouring cave. This may have been "Holyboy's Cave" not far distant from Cave S.² With especial care, therefore, I worked through dozens of small bones obtained from an extensive pocket near A (*cf.* Plan, Fig. 1 in the text). I am fairly confident that I have overlooked nothing distinctive of any animal capable of being so described, and the record of such a form remains still to be published. I may remark that Dr. Gadow has recorded the presence of the lemming in the caves of Portugal.

In concluding this Report I wish once more to tender my thanks to those who helped my work in various ways, and to express the hope that the University of Cambridge may be able to provide for further researches of this kind.

APPENDIX I.

In the prosecution of the researches described in this communication, I received much help from those whose names are here appended. My best thanks are due to all for their co-operation.

H.E. The Acting Governor, General Perrott, C.B.

Rear-Admiral F. S. Pelham.

Superintending Civil Engineer, E. Wakeford, Esq., M.I.C.E.

¹ The scarcity of the remains of the seal in prehistoric deposits of all periods is very striking and deserves special investigation.

² From Holyboy's Cave I obtained bones of the rabbit, rock-dove and a thrush-like bird. I may add that though the further information was given to me that the discovery of the Arctic rodent was communicated to the Zoological Society, the *Proceedings* of that body since about 1890 seem to contain no such record. I searched the zoological record from 1899 onwards, but without discovering any reference of the kind. The whole subject of the significance of bones attributed to *Myodes* (lemming), and their value as indicative of Arctic conditions requires re-investigation. This is imperatively necessitated by the statements of Barrett-Hamilton (*Proceedings of the Zoological Society*, 1896, pp. 306 *et seq.*), who suggests that a variety of lemming may be found still existing in Spain. The exact nature of the small rodent found in the Sierra de Gredos, and called locally the "Liron," should be specially ascertained.

Deputy Expense Accounts Officer, F. W. Cary, Esq.

Deputy Ordnance Store Officer, G. A. Storey, Esq.

Major A. W. Abercromby, G.S.O.

Colonel E. R. Kenyon, R.E.

Major G. P. Scholfield, R.E.

Lieut. R. K. A. Macaulay, R.E.

Major Sewell, R.E.

W. Turner, Esq., M.V.O., M.A., M.D., Surgeon to the Colonial Hospital.

B. H. T. Frere, Esq., LL.B., Attorney-General.

J. Rowland Crook, Esq., A.M.I.C.E.

W. Wallace Copland, Esq., A.M.I.C.E., F.R.M.S.

Mr. Sweeny.

Mr. Ferrari.

APPENDIX II.

REPORT ON THE COLLECTIONS EXHIBITED AT THE GARRISON LIBRARY, GIBRALTAR.

These collections are stored in a room adjoining the Garrison Library. They fill three large cases with glass doors. These cases will be referred to as Nos. 1, 2, and 3, numbered from the south end of the room, Case No. 1 being the furthest from the doorway.

Case No. 1.

This contains trays with specimens from Collins' Cave. The precise situation of this cave is about 420 feet above sea-level. It lies due west of the northern portion of Catalan Bay village.

The specimens are divisible into two series. Of these, one comprises bones very similar in appearance to those found by me in Cave S, and described in my Report. From Collins' Cave the human remains are not very numerous, consisting principally of metatarsal bones. The associated fauna includes the ibex, boar, rabbit, ox, and deer (described as *C. elephas*). The femur ascribed to a "large cat" is probably that of a lynx. Birds are represented by the humerus of an eagle or vulture. With these bones there is a certain amount of gritty (? siliceous) sand which I cannot match with any of the soil from Cave S.

In addition to the foregoing objects, Collins' Cave provided another series of remains. These consist of three or four blocks of red brecciated earth containing bones which I could not identify. Their general condition resembles that of bones found by me at Pikermi in Attica, and is strongly contrasted with that of the other bones from Collins' Cave. They are described as having been derived from the deeper levels of the cave.

Case No. 2.

This contains many trays of bones from the Genista Caves, Nos. 2 and 3 (*cf.* Busk, *op. cit.*, 1868, for reference to these caves). There are also five human metatarsal bones from Collins' Cave. Lastly, we find masses of red breccia with fragments of large bones referred (though the authority is not given) to *Elephas antiquus*.

On the human remains from the Genista caves (Nos. 2 and 3) I made the following notes:—

Skulls are represented by parts of the upper maxilla and the mandible of an adult woman. There is part of a male maxilla. The female bones are small, the upper maxilla showing no marked prognathism. The mandible has a somewhat large angle (120°) and the chin is not very prominent. A feature of distinction seemed at first to be present in the narrowness of the space between the two rami. But the length-breadth index is 121, so that no inferiority is really denoted. The most marked degree of this narrowing I have seen is exhibited by the mandible of a South African Bush woman, in which the corresponding index is 84.3 (*Mus. Anat. Cant.*, Specimen B).

A male temporal bone (right side) has a small mastoid process, exposing part of the digastric groove, but no great stress can be laid upon this character, as here developed.

Of associated bones, but one collection is to be found. This comprises a female pelvis with a well-curved sacrum, both *humeri*, left radius and right femur. The latter is undoubtedly female, though the *linea aspera* is remarkably prominent, giving the characteristic "earinate" form already noted by Busk (*op. cit.*, 1868) in the femora from the Genista caves. Indeed, for all that is known, that author may have based his description on this very bone.

In addition to the foregoing bones, two other *sacra* next claim attention. They differ entirely from the curved female sacrum just mentioned, in respect of their form, which is extraordinarily flattened. Otherwise both bones are rather small in comparison with modern European *sacra*.

Of other limb bones, six clavicles, part of a right scapula, three *humeri*, one ulna and one tibia remain for consideration.

The clavicles are distinctly slender, but they present a remarkable range of variation in respect of their curvature. In the *humeri*, the olecranon fossa is imperforate in each example. In the ulna, the olecranon process is well developed, exhibiting no feature of inferiority.

The tibia is not platynemic: the lower end has been destroyed, so that no observation on the lower articular surface is possible.

Case No. 3.

This case contains numerous sherds, and also flint or chert implements from caves in the rock. There are a few miscellaneous osteological specimens, including

three crania of the Gibraltar ape, showing well the several differences in the skulls of this species. Various mineralogical specimens and stalactites from the caves, together with certain relics of the Great Siege, complete the list of objects preserved here.

APPENDIX III.

MASSES OF BRECCIA CONTAINING BONES.

A room in the Garrison Library at Gibraltar contains several hundredweights of blocks of stalagmite, varying in size from that of an orange to that of a football. Most of these blocks contain fragments of bones. They were obtained in the course of excavating a magazine in one of the Genista caves (No. 1) on Windmill Hill Flats in the years 1895-96. The actual locality was a small cave, twenty-five feet deep, and beneath the present "shifting and examining" rooms. This small cave has no connection with the larger caves existing beneath the magazine. The foregoing information was kindly supplied by Colonel Kenyon, R.E. (*cf.* Correspondence, 1910, in the Gibraltar Garrison Library Records).

In regard to the animals represented by these bones, I have been able to recognise with certainty bones of Ungulata only. There are portions of limb-bones of Rhinoceros, Bos, and Cervus. In some instances, splinters of bone have become detached from the matrix and can thus be examined more thoroughly. I have been unable to detect any remains of Carnivora.

The substance of this report (on these fragments) was communicated to Colonel Kenyon, before my departure from Gibraltar, in October, 1910.

APPENDIX IV.

Since the foregoing Report was written, I have received news of a great landslip which took place on Christmas Day, 1910. Early on that day an immense fall of rock occurred, hundreds of tons being precipitated into Forbes' Quarry, which was thereby filled up almost entirely. The mouth of the cave has thus been rendered practically inaccessible. Inasmuch as the fallen masses are derived from what was previously solid rock in the heights above, no important exposure has been made thereby. But the incident provides an admirable example of the mode of formation of the brecciated talus.

List of Illustrations with Legends to Figures.

PLATE XL.

Fig. 1. Sketch of Forbes' Quarry, Gibraltar, with cave. This part of the quarry is now (February, 1911) filled up completely with the débris from the landslip of December 25, 1910.

Fig. 2. From the brecciated talus adjoining Forbes' Quarry :—

- No. 1. *Vidua climacterica* (marine).
- No. 2. *Purpura lapillus* „
- No. 3. *Arca arabica* „
- No. 4. *Helix vermiculata* (terrestrial).
- No. 5. *Helix* (? sp.) „

The other specimens are the humerus of *Columba livia* (Rock dove), and part of the humerus of *Capra hircus* (Goat).

Fig. 3. *Purpura hœmastoma* from Cave S. Three curiously perforated examples.

Fig. 4.—No. 1. *Cypræa pyrum* artificially perforated, from Cave S.

No. 2. Delicate flint lamina from Cave S.

No. 3. Part of an armlet or anklet of shell (? *Triton*) from Cave S.

Fig. 5. As in Fig. 4, showing opposite side of anklet from Cave S.

Fig. 6. Fauna of Cave S :—

- Nos. 1 and 2. *Trochus tessellatus*.
- Nos. 3 and 4. *Purpura hœmastoma*.
- No. 5. *Purpura* (? species).

The remaining specimen is *Solen vagina*.

PLATE XLI.

Fig. 1. Stone implements and hæmatite block (No. 11) from Cave S. No. 2 is a typical Mousterian implement of quartzite.

Fig. 2. Stone implements of Mousterian type from Cave S. The specimens are Nos. 7, 13 and 15 (*cf.* text).

Fig. 3. Stone cores (Nos. 1 and 12) and hammerstone (No. 10) from Cave S.

Fig. 4. Fauna of Cave S :—

- No. 1. Humerus of *Testudo græca*.
- No. 2. Humerus of bat (? *Pipistrellus*.)
- Nos. 3 and 4. Recent terrestrial *Helix*.
- (Species not identified.)
- No. 5. Mandible of *Mus sylvaticus levisi*.
- No. 6. Mandible of *Mus* sp. ? *rattus*.
- No. 7. Mandible of *Sorex araneus* ? *granarius*.
- No. 8. Os innominatum : *Arvicola* (? species).

Fig. 5. Distal aspects of entocuneiform bones. The largest (to the left) is from the skeleton in Cave S ; the central one is from the skeleton of an aboriginal native of Australia (*Mus*. Anat. Cant.) ; the remaining (smallest) bone is from the skeleton of an adult chimpanzee (*Mus*. Anat. Cant.).

Fig. 6. No. 1. Stalagmite mass from the floor of the cave in Forbes' Quarry.

No. 2. Stalagmite mass containing a land mollusc (*H. vermiculata*), at a depth of 3 feet 6 inches from the surface. From the floor of the cave in Forbes' Quarry.

Fig. 7. Stone implements and chips from Cave S.

PLATE XLII.

Fig. 1. Two views of the right astragalus from Cave S. A is the abnormal facet noted in connection with a similar facet on the tibia (*cf.* Fig. 4).

Fig. 2. Sections of tibia at level of junction of the soleal ridge with the internal border, to show platytenemia. D is a modern specimen from the Cambridge Anatomy School ; C R is the Cro-magnon tibia ; G I B is the right tibia from Cave S.

Fig. 3. Two tracings of right human tibia from Cave S to show retroversion of the head of this bone (angle $16^{\circ} 15'$).

Fig. 4. Front and back views of the right tibia from Cave S. *Cf.* note on Fig. 1 *supra*.

PLATE XLIII.

- Fig. 1. Front views of Cro-magnon tibia (above) and tibia from Cave S (below).
Fig. 2. Tibiæ from Cave S (the two bones to the right) compared with the cast of a tibia from Cro-magnon.
Fig. 3. Remains of adult male human skeleton from Cave S.
Fig. 4. Fauna of Cave S. Radius and humerus of goat and ibex, the latter being the larger specimens.
Fig. 5. Fauna of Cave S. No. 1. Metatarsal bone of Chamois. The remaining bones are as follows: Goat, fractured metatarsal bone and fractured femur. Ibex: femur (complete).
-



FIG. 1.



FIG. 4.

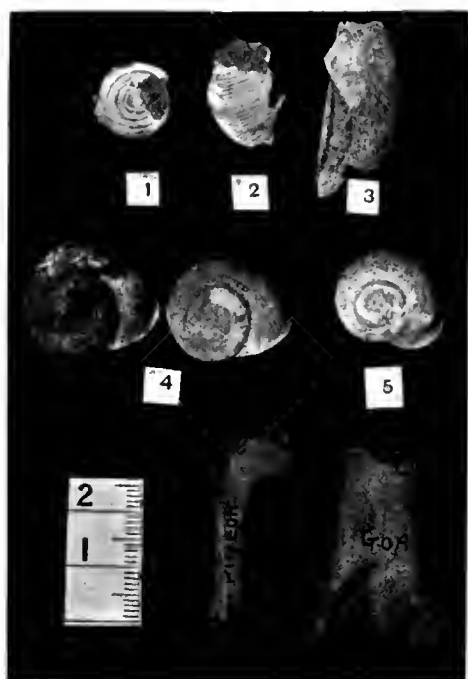


FIG. 2.

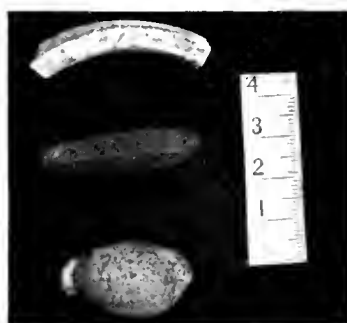


FIG. 5.

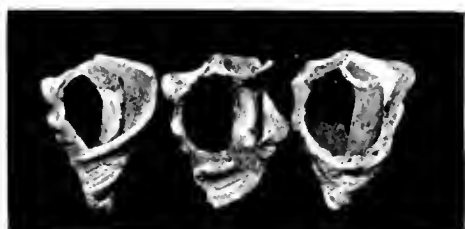


FIG. 3.

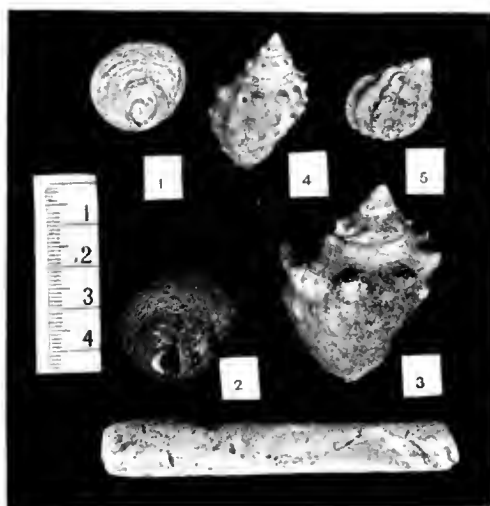


FIG. 6.



FIG. 1.



FIG. 2.



FIG. 3.

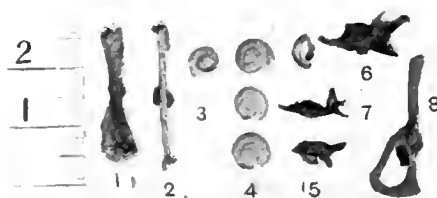


FIG. 4.

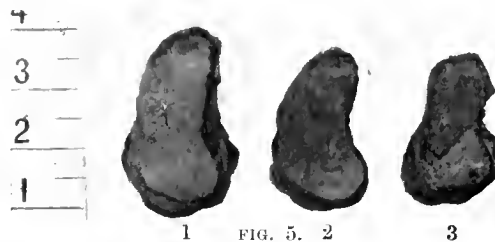


FIG. 5.

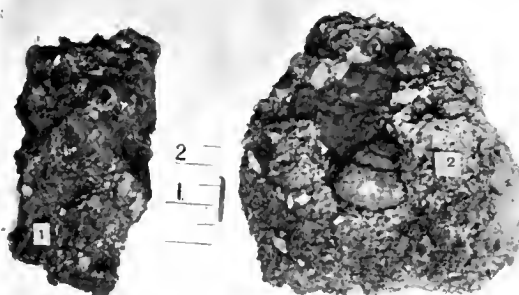


FIG. 6.



FIG. 7.

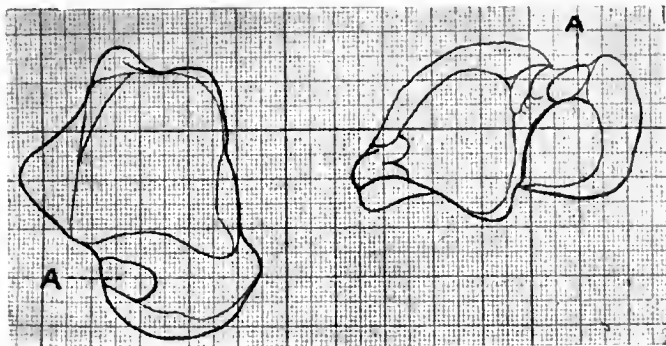


FIG. 1.

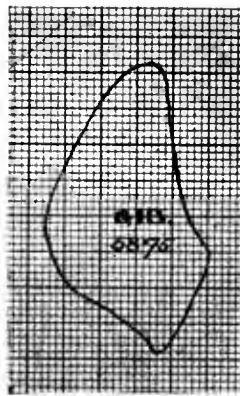
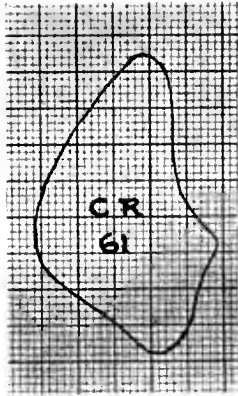
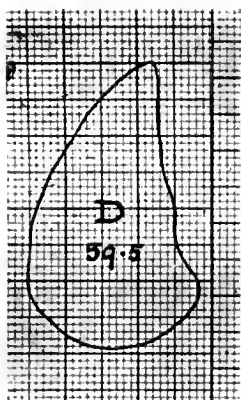


FIG. 2.



FIG. 3.

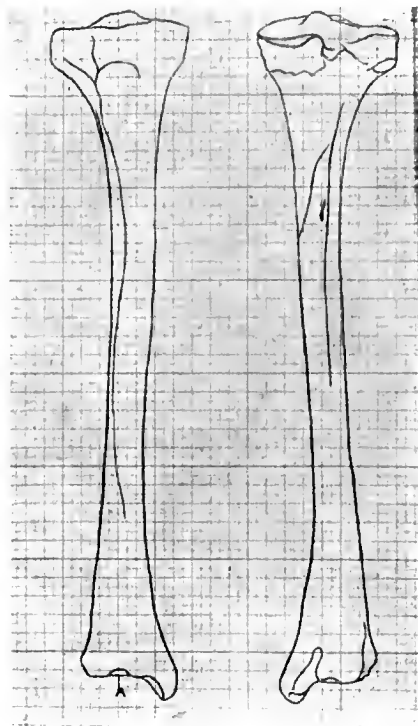


FIG. 4.

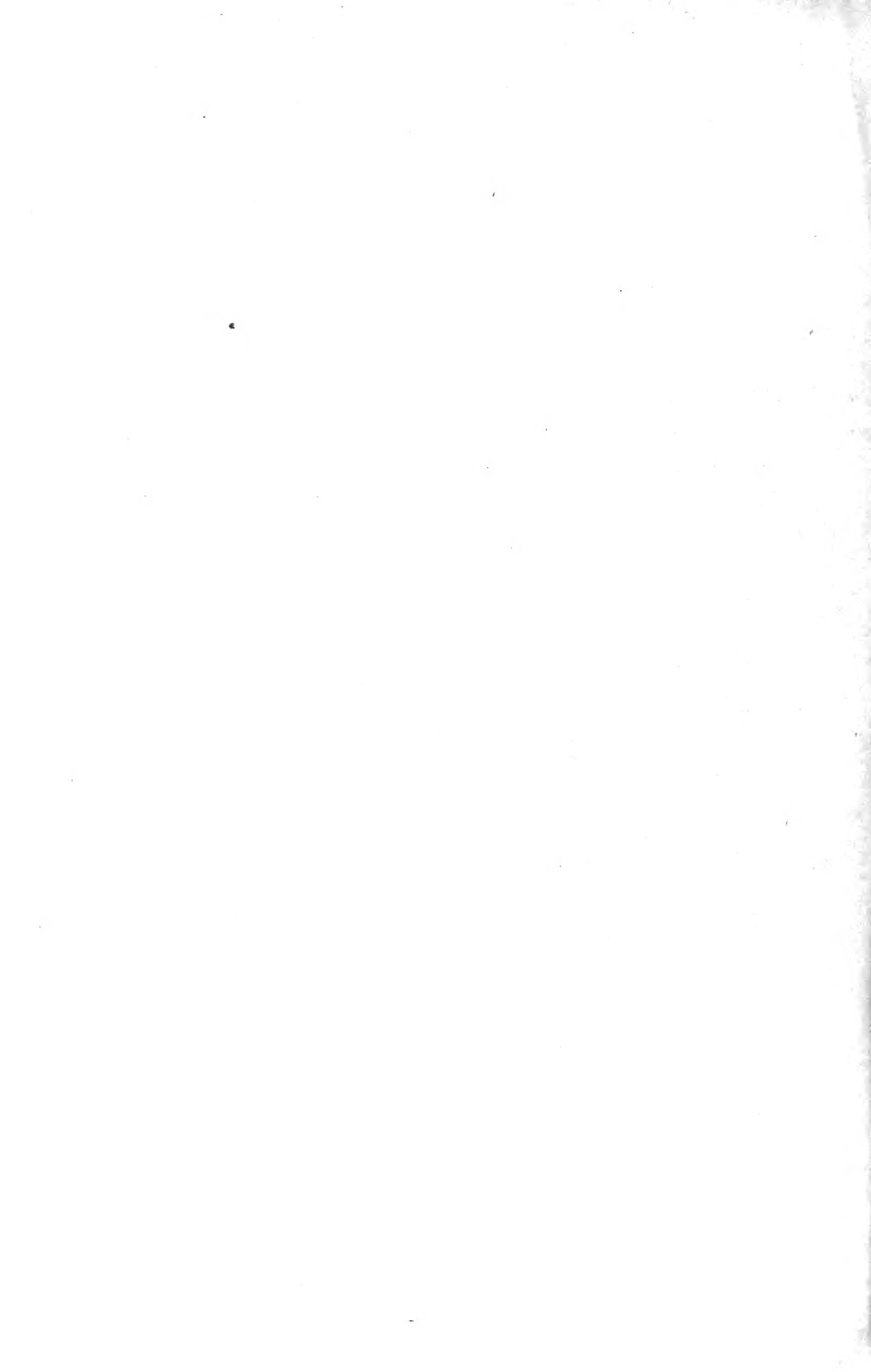




FIG. 1.



FIG. 2.



FIG. 4.

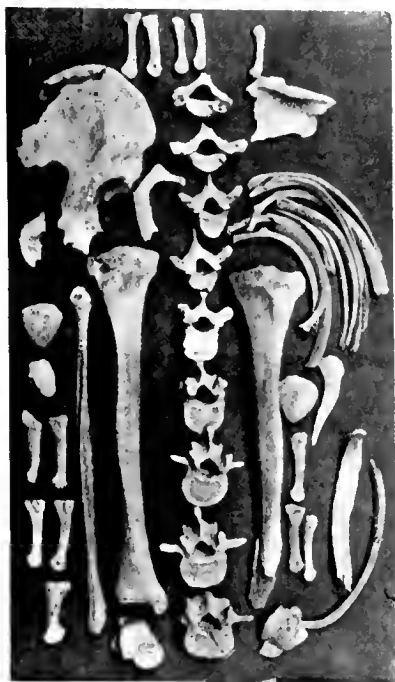


FIG. 3.



FIG. 5.



THE MAISIN LANGUAGE.

BY W. M. STRONG, M.A., M.D., Resident Magistrate, Territory of
Papua (New Guinea).

INTRODUCTION.

For my knowledge of the Maisin language, I am mainly indebted to Mr. P. J. Money, late of the Anglican Mission. He had lived for some years in close contact with Maisin natives, and spoke the language fluently. He very kindly placed his intimate knowledge of the language at my disposal, but has recently left the country. I have also myself lived for over two years in the north-eastern division of Papua (British New Guinea) and in frequent contact with Maisin natives, and am beginning to acquire a slight conversational knowledge of the language.

The Maisin language is spoken in many of the villages along the coast of Collingwood Bay and in the villages of the Kosirava district between the lower Musa and Barigi rivers.

The Maisin of Collingwood Bay relate that they emigrated from their original home in the Kosirava district, and passing inland of the mountainous peninsula of Cape Nelson reached the present Maisin villages on the coast of Collingwood Bay. Along the coast of this bay the Maisin come into intimate contact with tribes speaking Melanesian dialects. In the Kosirava district the Maisin occupy several villages of no great size in the midst of swampy country, and are surrounded by natives speaking Binendele dialects. On the seaward side of the Kosirava villages there are no natives, owing apparently to the country being little else than a large swamp.

The language is remarkable in that it really appears to be one of the rare instances of a language with a grammar derived from two distinct sources. I have classed it with the Melanesian languages¹ because it shows clear affinities with these, both as regards grammar and vocabulary. On the other hand, the grammar shows some characteristics which are quite unknown in other Melanesian languages—at least, in such as can be considered typical—and many words which are almost universal in the Melanesian languages of New Guinea are not found at all in Maisin.

Among Melanesian characteristics may be mentioned the existence in Maisin of an inclusive and exclusive form of the first person plural of the pronouns; of

¹ For a description of the Melanesian languages see R. H. Codrington, *The Melanesian Languages*, Clarendon Press, Oxford, 1885, and Sidney H. Ray, *Reports of the Cambridge Anthropological Expedition to Torres Straits*, Cambridge University Press, 1907.

objectival suffixes to the verb; of suffixed possessive pronouns; of a verbal auxiliary, and the formation of prepositions from a noun, a suffixed possessive pronoun and a directive particle. These are all definite Melanesian characteristics. In the vocabulary may be noted *tamati*, man; *mata*, eye; *susi*, breast; *ke*, leg; *namu*, mosquito; *bau*, bamboo; these are all clearly related to words which occur in typical Melanesian languages.¹

The existence of a complete set of suffixes which are used to decline the noun is the most marked character in which this language differs from the typical Melanesian languages. At most, the other languages of this group may appear to have a locative case; but this apparent case is then clearly only a common directive particle, which has united with the noun and in so doing has, in a few instances, suffered a euphonic change.² On the other hand, in Maisin there is a well-defined objective, dative, instrumental, locative, ablative and vocative case in addition to the simple form of the noun which is used as a nominative case. Moreover, these cases are not formed simply by adding particles to the nominative case, but are intimately combined with the nominative (*i.e.*, the stem or root), and in so doing, have suffered extensive euphonic changes.³ Not only are nouns declined by these suffixes, but pronouns and adjectives⁴ are also declined by means of the same suffixes, and the form of some other words⁵ are such as to show that they are really cases of a noun. We are driven to the conclusion, either that the Maisin have adopted their declension from some other non-Melanesian language or that they have invented the same for themselves, or that Maisin is a very primitive form of the Melanesian language, and that the declension has been lost in other languages of the group. The first supposition is the least improbable. When the Maisin language does conform to the typical Melanesian type there is nothing to indicate that the Maisin is in any sense primitive⁶; nor is there anything to indicate that the case suffixes are only Melanesian particles which have coalesced with the noun, adjective or pronoun. On the other hand, there are indications that Maisin is a Melanesian language which has been modified, as is to be expected if a Melanesian language was imperfectly learnt by a non-Melanesian speaking people. For instance, the second and third person singular, the first person exclusive plural, and the second person plural of the possessive suffix are all confused together and have not each got a distinct termination⁷ so also the first and second person singular, the exclusive first person plural, and the second person plural of the objectival suffix are all confused together.⁷ The use of the possessive suffixes also indicates the same fact. In other Melanesian languages these suffixes

¹ Compare Sidney H. Ray, *op. cit.*, p. 482 *et seq.*

² *E.g.*, in Motu, *hanuai*, at the village, from *hanua*, village, and *ai*, to.

³ *E.g.*, *furembe* for *fureng-be*; *kaseng* for *ka-eng*.

⁴ *Cf. infra*, p. 387 and p. 386.

⁵ *Cf. infra*, p. 391 *et seq.*

⁶ In the comparatively few instances where the vocabulary on pp. 395-396 shows a relationship with the Melanesian the same is by no means obscure, *e.g.*, *mata*, eye.

⁷ *Cf. infra*, p. 397.

are used with all names of relations, parts of the body, and a few other words¹; but in Maisin they are not used with names of relations, and with only certain parts of the body and a few other words.² It seems as if a non-Melanesian race had learnt a Melanesian language and, in the case of relations and some parts of the body, had retained their old method of forming the possessive.

The method of conjugation of the verb by means of suffixes, is hardly in accordance with other Melanesian languages, although it might conceivably have grown up from the adverbial suffixes which are so commonly used in Motuan.³ The numerals are, again, quite different from the numerals which are pretty nearly universal in almost all the Melanesian languages of New Guinea.⁴

Assuming that Maisin is a Melanesian language influenced as regards its grammar by a foreign element, the question arises as to the source by which it has been influenced. At the present time the Maisin are practically surrounded by Melanesian or Binendele speaking natives. It is true that three cases have been described in the Binendele language⁵; but the resemblance between the grammar of this language and Maisin is very meagre. The three cases in Binendele are really hardly more than nouns followed by prepositions. The Maisin numerals and pronouns show no similarity to the Binendele.⁶

On the north-west, the Kosirava Maisin come into fairly close contact with Kairira speaking natives of the hydrographer range. Nothing is really known of the grammar of the Kairira dialects; but I am from my own observation satisfied that many—and perhaps all—the villages on the Upper Barigi River and on the southern slopes of the hydrographer range speak varying but closely allied dialects of this language. It is perhaps in this direction, or in the direction of the unexplored triangle between the Central, Kumisi,⁷ and north-eastern divisions of New Guinea, where the language must be looked for, which has so profoundly modified the parental Melanesian language from which the Maisin has sprung, or, failing this, to some language of this region which has since become extinct.

PHONOLOGY.

In the following the vowels are to be pronounced as in Italian and the consonants as in English.

¹ Cf. Rev. W. G. Lawes, *Grammar and Vocabulary of Language spoken by Motu Tribe*, Charles Potter, Sydney, 1896, p. 11.

² Cf. *infra*, p. 395 *et seq.* It may be noted that the suffixes are usually used in the Melanesian languages of New Guinea when persistent possession is indicated as opposed to temporary ownership.

³ Cf. Rev. W. G. Lawes, *op. cit.*, "directive particles," p. 14, and Sidney H. Ray, *op. cit.* vol. iii, p. 459.

⁴ Cf. *infra*, p. 393, and Sidney H. Ray, *op. cit.*, iii, p. 470.

⁵ Sidney H. Ray, *op. cit.*, iii, 367.

⁶ Cf. Sidney H. Ray, *op. cit.*, iii, pp. 368 and 373. It may be noted, however, that the method of forming the tenses in Maisin and Binendele is not altogether dissimilar, and that euphonic changes occur in both languages.

⁷ Formerly the Northern Division.

The following consonants occur in the Maisin language, viz., b, d, f, j, k, m, n, r, s, t, v, w, y. The consonants l and p do not occur; and g only combined with n in *ng*. The vowels are a, e, i, o, and u. A is at times pronounced short as in *faketi* and closely similar to u in the English bun. Diphthongs au, ai, ei, and oi occur and also the vowel sound heard in the English word law. I am writing it *ōā*.

A word may end in any vowel or in *ng*. *Ng* can hardly be regarded as a true consonant, i.e., there is no sudden stoppage of the voice in the throat but rather a guttural modification of the preceding vowel with the nasal cavity also opened. When words ending in *ng* are combined with suffixes the guttural character is lost and the *ng* is replaced by *n* or *m*.

H does not occur, and the Maisin appear to be unable to pronounce it. Motu speaking Maisin commonly turn an h into a w, e.g., they say *kewa* for *kehoa*, and *manu wiwina* for *manu huihuina*. The same mispronunciation is not uncommonly heard among Motu speaking Binendele natives.

NOUNS.

1. FORM AND DERIVATION.—The noun is usually a simple word.

Nouns denoting an agent are derived from verbal roots by suffixing *fafusi*, e.g., *fe-fafusi*, one who falls; *kafi-fafusi*, a watchman. Similar to these are the following: *viso fafusi*, a fleshy thing; *namu-fafusi*, a place infested with mosquitoes; *karere-fafusi*, a merciful person—from *visoa*, flesh; *namu*, mosquito; and *kevere*, soft, respectively.

2. NUMBER.—The noun is usually the same in the plural as in the singular. In a few cases the noun is reduplicated in the plural and in other cases a suffix *-se* is added; e.g., *tōā*, land; *tōātōā*, lands; *woyang*, a hill, *woyanse*, mountains; *tamati*, man, *tamatise*, men; *kawo*, chief, *kawowo*, chiefs; *yabi*, clan-father, *yabise*, clan fathers; *yo*, clan mother, *yose*, clan mothers; *morobi*, girl, *momorobi*, girls. The following two words have an irregular plural; *sauki*, wife, *sauke*, wives; *teiti*, boy, *jameng*, boys.

3. CASE.—The noun is declined by a very complete series of suffixes as follows:—

Vocative, *-e* or *-be*.

Objective, *-nang*.

Possessive, *-ari* or *-a*.

Dative, *-so*.

Instrumental, *-eng*.

Locative, *-e*.

Ablative, *-efe*.

The simple form of the noun is sometimes used as the nominative; but the subject of the sentence is often put in the instrumental case: e.g., *tamati yetave era*, the man went to the path; but *tamateng kaseng itarawusi*, the man hit him with a stick.

The form of the vocative with the suffix *-e* is commonly used when addressing a man by name. The second form of the vocative with the suffix *-be* implies respect; but it is also used in a derogatory sense in the case of animals, *e.g.*, *namu-be*, Oh you mosquitoes!

The true possessive suffix *-a* is only used with proper names: the suffix *-ari*, is really the third person singular of the possessive pronoun.

The suffix *-so*, is used after the verbs to give and to tell, *e.g.*, *teiti-so kasu kumenanang*, will you give the boy some tobacco.

The locative has a very general signification.

The place from which a person comes is put in the ablative, *e.g.*, *Tufi-efe*, from Tufi.

Both the locative and ablative cases are used to express a preposition, *e.g.*, *tafare*, for *tafa-ari-e*, at its top, *i.e.*, on; *kamefe*, for *kami-efe*¹, from the side of *i.e.*, from a person.

The simple form of the noun often suffers a change when the case suffixes are added, *e.g.*, *tamateng* for *tamati-eng*, by the man; *kaseng* for *ka-eng*, with the wood; *furembe* for *fureng-be*, kangaroo; *furemari* for *fureng-ari*, of the kangaroo; *yeta-e*, to the road; *wake* for *wa-e*, to the village.

If the noun has a plural suffix the case suffix follows the plural suffix, *e.g.*, *tamatiseng* for *tamati-se-eng*, by the men.

ADJECTIVE.

1. FORM AND DERIVATION.—The adjective is generally a simple root. It is placed after the noun, *e.g.*, *teiti taubang*, a good boy.

2. NUMBER.—The adjectives frequently change, in the plural; but in no very regular way. The following is a list of adjectives taken at random, to show the change in the plural:—

English.			Singular.			Plural.		
Large	...	...	<i>Nombo</i>	...	...	<i>Nomboi.</i>		
Small	...	...	<i>Kati</i>	...	...	<i>Kate.</i>		
Good	...	...	<i>Taubang</i>	...	...	<i>Borege.</i>		
Bad	...	...	<i>Si...</i>	...	...	<i>Sisari.</i>		
Thick	...	...	<i>Fotuna</i>	...	...	<i>Fotunari.</i>		
Thin	...	...	<i>Kate-keisi</i>	...	...	<i>Kate-keisa.</i>		
Hard	...	...	<i>Wena</i>	...	...	<i>Wenari.</i>		
Soft	...	...	<i>Kaveve</i>	...	...	<i>Kaveveri.</i>		
Hot	...	...	<i>Fufufi</i>	...	...	<i>Fufufi.</i>		

¹ Or *kang-efe*.

English.			Singular.		Plural.
Cold	...	...	<i>Turuki</i>	...	<i>Turuki.</i>
Old	...	...	<i>Adina</i>	...	<i>Adina.</i>
New	...	...	<i>Waong</i>	...	<i>Waong.</i>
Clean	...	...	<i>Bingonaniti</i>	...	<i>Bingonanita.</i>
White	...	...	<i>Foe</i>	...	<i>Foeya.</i>
Black	...	...	<i>Gambubi</i>	...	<i>Gambubari.</i>
Red	...	...	<i>Mu</i>	...	<i>Murari.</i> ¹
Yellow	...	...	<i>Gabo</i>	...	<i>Gubora.</i>

3. CASE.—The adjective is declined by means of the same suffixes as the noun (see p. 384 *et seq.*). Moreover, when a noun is qualified by an adjective the noun does not take the case suffix, *e.g.*, *sauki nomboweng kasu gabubinang teiti taubangso i-men*, the fat woman gave black tobacco to the good boy. It will be observed that it is the adjectives *nombo*, fat; *gabubu*, black; and *taubang*, good, which take the case suffixes to indicate the instrumental, the objective, and the dative case, and that the nouns *sauki*, woman; *kasu*, tobacco; and *teiti*, boy, have no suffix.

4. COMPARISON.—There is no true comparison of the adjective. The following sentences will indicate how a comparison is expressed. *Teiti inaki taubang aka nene si*, this boy is better than that, literally, boy this good but that bad. *Maume waki Uiaku waki i-karase*, Maume village is smaller than Uiaku, literally, Maume village Uiaku village is inferior to; or the same sense may be expressed by *Maume waki rati*, *Uiaku waki nombo*, literally, Maume village small, Uiaku village big.

PRONOUNS.

The pronouns and their derivatives are strictly comparable to those of the Melanesian languages generally. It is these which give the clearest proof of the close relationship between the Maisin and the Melanesian languages generally. There is a true personal pronoun and also an emphatic form of the same, a possessive adjective and a possessive pronoun, a possessive suffix and an objectival suffix, and also a verbal auxiliary. The form of these, however, depart widely from their usual Melanesian equivalents in some instances.² In each case there is an exclusive and an inclusive form of the first person plural.

The simplest form of the pronoun appears to be used as a possessive adjective.

¹ It may be noted that *ari* is a not uncommon termination for adjectives in Binendele.

² The Maisin language also differs from the general type of Melanesian languages in that relatives take the possessive pronoun and not the possessive suffix, and moreover it is only certain parts of the body which take the suffix. These are indicated in the vocabulary on page 395 *et seq.* *Asang*, name, takes the suffix.

The true personal pronoun appears to be derived from this by adding a suffix *-o*, an emphatic form by adding a suffix *-e*, and the possessive pronoun by adding a suffix *-kang*; but very extensive euphonic changes take place also. The personal pronoun itself is declined by the same series of suffixes as are used to decline the noun and adjective; but the other forms are not declined.

PERSONAL PRONOUN.

The personal pronoun exists in two forms, one of which is used for emphasis. The emphatic form is not declined, but the ordinary form is declined. These forms are as hereunder:—

			<i>Simple form.</i>	<i>Emphatic form.</i> ¹
SINGULAR—				
1st person	...	...	aro	awe
2nd person	...	...	ero	eye
3rd person	...	...	airo	aire
PLURAL—				
1st person, <i>exclusive</i>	...	...	anno	ano
" <i>inclusive</i>	...	...	aitiro	aite
2nd person	...	...	enno	ene
3rd person	...	...	ciro	eiye

A dual is formed by adding *yaiseng* to the plural of the first form, giving *anno yaiseng*, *aitiro yaiseng*, *enno yaiseng* and *ciro yaiseng*. It will be observed that *yaiseng* is not the numeral "two," since this is *sandi*.

The simple forms of the personal pronouns have each an objective, dative and instrumental case as follows:—*Aro* forms the cases *anang*, *aso* and *aseng*; *ero* has the cases *enang*, *eso* and *eseng*; *airo* the cases *ainang*, *aio*, *aireng*; *aitiro* has *aitinang*, *aitiso*, *aitiseng*; *anno* has *anang*, *anso*, *anseng*; *enno* has *enang*, *enso*, *enseng*; and *eiro* has *einang*, *eio*, *eiseng*. A consideration of these forms will show that the "r" and one "n" in the nominative case is probably only added for euphony.

The second person singular also has a vocative *eye*, while the third person has vocatives *aire* and *aibe* in the singular and *eiye* in the plural. *Aire* is used in addressing a junior and *aibe* in addressing a senior.

EXAMPLES:—

Eseng kumeng, you gave it, or, did you give it?

Ero asu kuanang? What are you doing?

Aro aranang, I am going.

Ero taranang? Shall we go?

E serai? Awe. Eye. Who is it? It is I. So it is you, is it?

¹ These may probably be regarded as the vocative cases of the simple form. See *infra*.

POSSESSIVES.

There is both a possessive adjective and a possessive pronoun as follows:—

			<i>Adjective.</i>	<i>Pronoun.</i>
SINGULAR—				
1st person	...	...	au	akang ¹
2nd person	...	...	ai	ekang
3rd person	...	...	ari	aikang
PLURAL—				
1st person, <i>exclusive</i>	...	...	ang	ankang
„ <i>inclusive</i>	...	...	aiti	aitikang
2nd person	...	...	eng	enkang
3rd person	...	...	e	eikang

EXAMPLES:—

Inang akang, this is mine.

Au yabi, my father.

Au me, my banana.

Inang au ganang, this is my spear.

SUFFIXED PRONOUNS.

Suffixed pronouns occur in two forms: one of these is suffixed to certain nouns to indicate the possessor and the other is suffixed to transitive verbs to indicate the person and number of the object. They are as follows:—

			<i>Possessive suffixes.</i>	<i>Objectival suffixes.</i>
SINGULAR—				
1st person	...	...	-u	-reng
2nd person	...	...	-ang	-reng
3rd person	...	...	-ang	-si
PLURAL—				
1st person, <i>exclusive</i>	...	...	-ang	-reng
„ <i>inclusive</i>	...	...	-ti	-reti
2nd person	...	...	-ang	-reng
3rd person	...	...	-ai	-ri

As is common in the Maisin language there may be changes of a euphonic nature when these suffixes are compounded with words. It may be noticed also that in some instances the third person singular possessive suffix is dropped.

EXAMPLES:—*Matau*, my eye; *mata*, his eye; *matai*, their eyes; *asau*, my name; *asang*, his, thine, our, or your name; *asati*, our name. *Itarawureng*, he

¹ The suffix *kang* is probably connected with the same suffix *kang* in *sekang* and in the preposition *kamefe* (*kangefe*).

struck thee, him, us, or you; *itarawusi*, he struck him; *itarawureti*, he struck us (*inclusive*); *itarawuri*, he struck them.

VERBAL AUXILIARY.

The Maisin verbal auxiliary is used in exactly the same way as the verbal auxiliary is used in other Melanesian languages. Moreover, the form of the Maisin verbal auxiliary differs but little from the forms which are typical of this group of languages. It is as follows:—

SINGULAR—

1st person	...	...	...	a-
2nd person	...	...	...	ku- or ko-
3rd person	...	...	...	i- or e-

PLURAL—

1st person, <i>exclusive</i>	...	...	...	ka-
„ <i>inclusive</i>	...	...	...	ta-
2nd person	...	...	...	ku- or ko-
3rd person	...	...	...	ti-

In Maisin the verbal auxiliary is sounded as part of the verb and in the following will only be separated from it by an hyphen.

EXAMPLES:—

Tamati sandi a-tati ti-rara. I see two men they come.

Tufie ku-rari? Are you going to Tufi?

Tamateng ti-raiaka. The men are about to return.

VERB.

1. VERBAL AUXILIARY.—The verb is preceded by the verbal auxiliary, which has been described above. The verbal auxiliary does not vary for tense or mood.

2. VERBAL SUFFIXES.—The verb is modified in meaning by a series of suffixes to form a species of conjugation. It is not always easy to decide exactly what these suffixes really indicate, and primarily they do not appear to indicate tense. These suffixes are best regarded as of an adverbial nature and on the road to becoming tense and mood suffixes. With these suffixes may also be considered a prefix *ang* and the reduplicated form of the word. The verb itself is a simple root, and its verbal nature is indicated by the verbal auxiliary which precedes it.

Reduplication of the root.—As in other Melanesian languages reduplication primarily denotes a continuing action,¹ and, secondarily, is used to denote a present action. The reduplicated form of the verb may be described as a present tense, *e.g.*, *i-fefe*, he is falling.²

¹ *Mel. Lang.*, p. 191, and Ray, III, 461.

² Changes of a euphonic nature often take place in the reduplicated form.

Ati.—This suffix appears primarily to denote certainty, and from this idea a past significance appears to be derived, *e.g.*, *i-feati*, he did fall.¹

Anang.—The suffix *anang* primarily appears to express doubt, and from this a secondary meaning of futurity seems to be derived, *e.g.*, *i-fe-anang*, he will fall.

Me.—This suffix indicates that an action took place immediately, *e.g.*, *i-fe-me*, he fell at once.

Aka.—This denotes an expectation on the part of the speaker, *e.g.*, *i-fe-aka*, he is about to fall.

Feng.—This suffix combines with the suffix *aka* and denotes an expectation not fulfilled. *e.g.*, *i-fe-aka-feng*, he would have fallen but——

Ateni.—This suffix denotes a desire on the part of the speaker, *e.g.*, *i-fe-ateni*, Oh! that he might fall.

Ang.—This prefix *ang* denotes the prohibitive, *e.g.*, *ang-ku-fe*, do not fall.

More than one of these suffixes may be present at the same time; and the order in which they occur is as follows: *-me*, *-anang*, *-aka*, *-feng*, *-ate*, *-ateni*, *e.g.*, *i-fe-me-ati*, he fell at once; *i-fefe-anang*, he will be falling; *i-fe-aka-anang*, he will be on the point of falling; *i-fe-me-aka-femate* (for *i-fe-me-aka-feng-ate*), he would certainly have fallen but——

3. THE AUXILIARY VERB *Nei*.—Certain verbs are formed with the aid of an auxiliary verb *nei*, *e.g.*, *kaiŋi ku-nei*, watch; *tamati ku-nei*, be a man, *i.e.*, act like one. *Nei* takes the same suffixes as the ordinary verbs giving the forms *ineate*, *iname*, *ineanang*, *ineaka*, *ineakafeng*, *ineateni*, *inane* or *inang* (reduplicated), and *ang ku-nang*.²

4. VERBAL SUFFIXES ATTACHED TO OTHER VERBS.—Besides the true verbs other words may take the verbal suffixes and the verbal prefix, *e.g.*, the dative of the possessive pronoun, *aso*, has the forms *asorate*, it was mine; *asoanang*, it will be mine, etc.

5. LIST OF VERBS.—The following is a short list of verbs in the Maisin language.

Cry, <i>tesi</i> .	Pinch, <i>kifa</i> .
Eat, <i>kang</i> .	Come, <i>rai</i> .
Drink, <i>kung</i> .	Bury, <i>watawi</i> .
Hear, <i>rua</i> .	Buy, <i>kuma</i> .
See, <i>kite</i> .	Go, <i>ro</i> .
Be at a place, <i>tauki</i> .	Dig, <i>kiya</i> .
Stand, <i>reise</i> .	Bring, <i>waweng-rai</i> .
Sleep, <i>matutu</i> .	Give, <i>medi</i> .
Spit, <i>kasufe</i> .	Take away, <i>waweng-ro</i> .
Bite, <i>karafe</i> .	Plant, <i>wa</i> .

¹ This suffix is not used in negative or interrogative sentences.

² It will be observed that the verbal auxiliary "i" or "ku" has been prefixed to these forms.

Taste, <i>karasosomi</i> .	Scratch, <i>kari</i> .
Speak, <i>efi</i> .	Die, <i>mate</i> .
Know, <i>kasang-nane</i> or <i>rua</i> .	Burn, <i>karati</i> .
Open, <i>yasiri</i> .	Fly, <i>rufi</i> .
Destroy, <i>wanuwanté</i> .	Drip, <i>dada</i> .
Fear, <i>kaya</i> .	Burn (of food), <i>fufu</i> .

ADVERBS.

1. ADVERBS DERIVED FROM ADJECTIVES.—There are a few adverbs which are derived from adjectives such as *nombo-wang*, greatly, from *nombo*, big ; *sisang*, badly, from *si*, bad—and in the plural *sisaring*, badly, from *sisari*, bad ; *taubang*, well, from *taubang*, good ; *moturang*, truly, from *moturang*, true ; *moteng*, strongly, from *kemodeti*, strength ; *dedeang*, slowly, from *dede*, slow.

It will be observed that the adverb always ends in a “ng” and that this is the characteristic of the objective and instrumental cases. It is not improbable that to the native mind these adverbs are really little else than a species of object to the verb, e.g., *sisang i-nei*, he did it badly ; literally, he did badness : *moturang a-fi*, I am speaking truth (or truly). The following may also be noted : *sisang i-nei*, he did it badly, *sisaring ti-nei*, they did it badly.

2. ADVERBS DERIVED FROM THE CASES OF NOUNS.—Some adverbs are translated by nouns with a case suffix. In some instances the nouns are difficult to translate, although a consideration of the various forms makes it quite clear that the adverb is really only a case of a noun. With these may also be considered other words which hardly have any claim at all to be considered adverbs.

The adverbs of place, *inke*, here ; *nenke*, there ; and *enenke*, over there, have the termination of the locative. Corresponding ablative and objective forms exist, e.g., *nenang au sikoi*, this is my pig. With these may be noted *afunfe*, presently, the ablative of *afung*, now ; also the locatives *sirare*, in the morning ; and *foime*, at night (from *foing*, night) ; also the ablative *rasife*, to-morrow ; and *isa-fe*, when ? , referring to future time.

The cases of a species of abstract noun *neng* occur sometimes as a relative pronoun and sometimes as a conjunction. The real meaning of *neng* will be apparent from the following examples :—

The stick with which he hit the dog was broken, *ka tarunang itarawusi, neng i-ratosi*, lit., stick dog he hit, the aforesaid it broke. Here *neng* is in the nominative case.

The man returned because he was afraid, *tamateng waong i-rai-aka, nenso i-kayawa*, lit., the man back he came, for that he feared. Here *nenso* is the dative of *neng*.

When it rains he will come back, *Borong i-rai-fe, nenke i-rai-anang*, lit., rain it comes, at that he will come back. Here *nenke* is the locative.¹

¹ Cf. *supra*, *nenke*, there.

The man whom I saw yesterday has come, *tamati roro a-ti, neng i-rai*, lit., man yesterday I saw, that one he comes. Here *neng* is in the nominative.

The man who struck the pig has come, *tamati sikonang i-tarewu-si, nenkeng i-rai*, lit., the man who struck the pig has come. Here *nenkeng* is in the instrumental case, being the subject of a verb of action.

There are several interrogatives which appear with the case suffixes, e.g., the locative *manke*, where? the ablative *mankefe*, from where? the objective *manang*, what? the objective *avang*, what? the dative *avangso*, for what? and the dative *anso*, why? (lit., for what?).

3. SIMPLE ADVERBS.—The following may be mentioned:—*afung*, now; *ai*, yes; *kcsi*, no; *roro*, yesterday; *afung*, now; *yada*, at once; and also the interrogatives: *asu*, how? *isa*, when? (of past time); *avaini*, what? and *se*, who? The latter also has an objective case, *sekan*.¹

An interrogative may be expressed either by the tone of the voice, by one of the above interrogative words, or by “*i*” placed at the end of the sentence as in the following examples. *Se nei*, who has done it? *Isa i-rai*, when did he come? *Ruang i-kankan i*, did he eat food?

The negative is expressed by *isa* before the verb and *ka* after it, e.g., *tamatinang isa i-kiti ka*, he did not see the man.

PREPOSITIONS.

The locative and ablative case suffixes could be regarded as of a prepositional nature. The use of the locative suffix “*e*” is very similar to the particle “*ai*” which is so commonly used in the Motu language in much the same sense.

Other prepositions are expressed by means of a noun; the possessive pronoun, *ari*; and a locative or an ablative suffix. A list of these is given hereunder together with the uncontracted form of the same and their literal meaning.

In, *terere* for *tere-ari-e*, at its inside.

Out, *tere-merere* for *tere-mere-ari-e*, at its outside.

From (a person), *kamefe* for *kang-efe*, from the side.

To (a person), *kame* for *kang-e*, at the side.

On, *tafare*, for *tafa-ari-e*, at its top.

Below, *kakore* for *kako-ari-e*, at its bottom.

By, *sivare* for *siva-ari-e*, at his side.

Before, *rore*, for *ro-ari-e*, at his front.

Between, *sifone* for *sifon-ei-e*, at their middle.

Under, *kafire* for *kafa-ari-e*, at its bottom.

Under, *kafa-kakore* for *kafa-kako-ari-e*, below at its bottom.

¹ It may well be that the suffix *kang* is connected with “*kang*” in the distributives *kang esei* and “*kang*” in the possessive pronouns. See *infra*, p. 393.

NUMERALS.

There are distinct words for the first four numerals ; but from five upwards numbers are expressed by means of so many hands, feet and men as hereunder.

One, *sesci*.

Two, *sandi*.

Three, *sinati*.

Four, *fusese*.

Five, *faketi tarosi*.

Six, *faketi tarosi taure sesci*.

Seven, *faketi tarosi taure sandi*.

Eight, *faketi tarosi taure sinati*.

Nine, *faketi tarosi taure fusese*.

Ten, *faketi tau tau*.

Eleven, *faketi tau tau i-oki keti sesci*.

Twelve, *faketi tau tau i-oki keti sandi*.

Twenty, *tamati sesci*.

Twenty-seven, *tamati sescina tamati itere faketi tarosi taure sandi*.

Thirty, *tamati sescina tamati itere faketi tau tau*.

Forty, *tamati sandi*.

One hundred, *tamati faketi tarosi*.

In the above *faketi* means hand, *tau tau* both, *tarosi* the one side, *taure* the other side, *i-oki* it comes down, *keti* on their feet, *tamati* man, and *itere* another. The *na* which appears at the end of *sesci* in thirty, fifty, seventy, and ninety appears to be a species of demonstrative and is probably related to the "*na*" which is so commonly suffixed to the second of two nouns in Motuan.

A bundle of four coconuts is spoken of as *tafiri sesci*; and four bundles of sago as *furitenang*.

Once, twice, three times, etc., are translated *kang sesci*, *kang sandi*, *kang sinati*, etc.¹

First, second, third, etc., are translated *sesciseng* (or *sesci*), *sandiseng*, *sinateng*, *fusesciseng*, *faketi taroseng*, etc.²

SYNTAX.

The general order of the sentence is (1) subject, (2) object, (3) verbal attribute, (4) verb, as in the following:—

Tamateng sikonang yada i-tarawusi. The man at once struck the pig.

¹ Literally this is probably "three in neighbourhood." Compare *kange*, to a person; *kangefe*, from a person; *akang*, mine, i.e., something (which I keep) in my neighbourhood.

² These have the form of instrumental cases of the simple numerals.

The subject of the sentence may be in either the nominative or instrumental case.

The indirect object or dative and the instrument with which an act is performed is placed between the object and adverb as in the following :—

Sauki kasang teitiso biring i-men. The woman quickly gave the boy some tobacco.

Tamateng tarang kaseng yada i-tarawusi. The man at once hit the dog with a stick.

The adjective follows the noun and takes the case termination which is then dropped by the noun, *e.g.* :—

Sauki nomboweng kasu gambubinang teiti tuwangso biring i-men. The fat woman gave some tobacco to the boy at once.

The verb may consist of four parts. The verbal auxiliary is placed first, next the root of the verb, next the objectival suffix and finally the tense termination or terminations, *e.g.*, *i-tarawu-ri-anang*, he will hit them. If there is more than one case termination the order is as follows:—*me*, *anang*, *aka*, *feng*, *ate*, *ateni*, *e.g.*, *i-fe-me-aka-fem-ate*, he certainly expected him to fall immediately but—— The prohibitive particle “*ang*” precedes the verbal auxiliary, *e.g.*, *ang ku-fefe*, do not fall. The negative consists of two parts, *isa* and *ka*. *Isa* is placed immediately before the verbal auxiliary and *ka* after the tense termination. The interrogative “*i*” is placed at the end of the sentence, *e.g.*, *Tufie ku-rar'i*, are you going to Tufi.

A relative or adverbial sentence immediately follows the antecedent word, and a conjunction or relative is placed between the two clauses. The relative or conjunction, however, is really a part of the second clause (see also *neng* on p. 391).

Many short sentences lack a finite verb, *e.g.* :—

Inang fi ari fake-soeng. This is a bird's claw.

Nenang au sikoi. This is my pig.

The thing possessed always follows the possessor. If the possessive is a proper name a suffix “*a*” is added to the possessor, *e.g.*, *Riri'a wan*, Riri's pipe; *Fusio-a mevavi*, *Fusio's* bananas. In other cases the possessive pronoun is placed between the two. It would be possible to regard the possessive pronoun as being a suffix in these cases, *e.g.*, *fi ari fakesoeng* or *fiari fakesoeng*, a bird's claw.

SENTENCES.

Varefe i-rau. He went out of the house.

Fi-nang va tafare a-ti. I saw a bird on the top of the house.

Tamati i-kosi me sifone e-iseme. The man was standing between the coconut tree and the banana bush.

Yung asu a-we-anang. How shall I get across the river?

Tamati yetave e-r' aka wake isa e-r' ka. The man went to the road but not to the village.

Teiti-nang i-tarawusi me ibagi nenso. He hit the boy because he had stolen bananas.

Tamateng i-rai-anang, nenke aiso a-f'-anang. When the man comes I will tell him.

Tamati roro a-ti neng i-rai. The man whom I saw yesterday has come.

Kawowo sandi ti-rai. Two chiefs have come.

Tamati ti-no-si nenke kaika beji. The place where the man was killed is a long way off.

Manke ror manamana i-name (or *manke e-raka manamana iname*). He did not know where to go.

What did he say? *asu e-fi?* (lit., how did he talk?)

What is your name, *asang serai?* (lit., who is your name).

Which man has come? *tamati manang i-rai?*

Where are you going? *manke ku-rar?*

Why did you hit the boy? *anso teiti i-tarawu-si?*

When did he come? *isa i-rai?*

VOCABULARY.

Areca nut, *kara*.

Arm, *fake*.¹

Arrow, *yoising*.²

Ashes, *isang*.

Banana, *wau*.

Belly, *tina*.

Bird, *fi*.

Blood, *ta*.

Boat, *ka*.

Bone, *tukaki*.

Bow, *ango-ka*.³

Breast, *susi*.

Butterfly, *bimbaba*.

Chief, *kawo* (*kawowo* plural).

Child, *Teiti* (male); (*jameng* plural).

morobi (female); (*moorobi* plural).

Club, *kikirimata* (pineapple); *misi* (star); *sambia* (disc); *tofa* (wood).

Coconut, *ikosi*.

Crocodile, *guma*.

Dog, *taru*.

Ear, *kari*.¹

Earth, *tōa*.

Egg, *munju*, *wasi*.

Elbow, *ungobi*.¹

Eye, *mata*.¹

Face, *ro*.¹

Father, *yabi* (*yabise* plural).

Feather, *wuwudi*.

Fire, *wo*.

Fish, *mana*.

Flower, *sisi*.

Fly, *jinonji*.

Foot, *ke*.¹

Forehead, *ro*.¹

Fowl, *bioki*.

Hair, *kesa*.¹

Head, *ji*.¹

Hill, *woyang* (*woyanse* plural).

¹ These take a possessive suffix instead of a possessive pronoun. See pp. 383 and 386 (note).

² *I.e.*, midrib of the sago palm. Bow and arrow is not indigenous.

³ *I.e.*, wood of the hand-net. Bow and arrow is not indigenous.

House, *va*.
 Leaf, *fara*.
 Lime, *song*.
 Lip, *fufu*.
 Liver, *kate*.
 Louse, *tung*.
 Man, *tamati* (*tamatise* plural).
 Mat, *yang*.
 Moon, *tambung*.
 Mosquito, *namu*.
 Mother, *yo* (*yose* plural).
 Mouth, *kawa*.¹
 Name, *asa*.¹
 Navel, *tina-sisifi*.
 Neck, *iko*.
 Night, *foing*.
 Nose, *isu*.¹
 Outrigger, *samang*.
 Paddle, *kasi*.
 Pig, *siko*.
 Pot, *usu*.
 Rain, *borung*.
 Rat, *gorubu*.
 River, *jung*.
 Road, *yeta*.
 Root, *riti*.
 Rope, *mongi*.

Sago, *bayau*.
 Sail, *yaba*.
 Sand, *mangu*.
 Sea, *tasa*.
 Skin, *ando*.
 Smoke, *kasu*.
 Snake, *moti*.
 Spear, *ganang*.
 Spittle, *foforo*.¹
 Star, *damana*.
 Stone, *kimati*.
 Sugar cane, *to*.
 Sun, *ya*.
 Sweet potato, *gerota, kairekuta*.
 Taro, *kukung*.
 Tobacco, *tauna* (native); *kasu*
 (European).
 Tongue, *me*.¹
 Tooth, *nua*.¹
 Tree, *ka*.
 Village, *waki*.
 Wallaby, *fureng*.
 Water, *jung*.
 Wife, *sauki* (*sauke* plural).
 Wind, *vuvu*.
 Woman, *sauki* (*sauke* plural).
 Yam, *kuta*.

¹ These take a possessive suffix instead of a possessive pronoun. See pp. 383 and 386 (note).

COMPARATIVE NOTES ON MAISIN AND OTHER LANGUAGES OF EASTERN PAPUA.

BY SIDNEY H. RAY.

THE languages around Collingwood Bay taken in order from east to west are as follows: (1) Mukawa and Kapikapi, close to Cape Vogel, with (2) Boniki in the south; (3) Kwagila on the south shore of the bay, with (4) Ubir (Kubiri) spoken by the Waiawana tribe at Firtree Point, and (5) Raqa spoken by the Awanabairia tribe in the south-western corner of the bay. North of Raqa at Uiaku is (6) Maisin, with (7) Oiun and (8) Kiviri at Wanigela on the north-western shore. Of the languages inland southward nothing is known until the villages are reached on the south coast of Papua. Here the Papuan languages of Domara, at Cloudy Bay and Cheshunt Bay, Burumai in Baxter Bay, and Mailu on the coast and Toulon Island are closely related to one another. Beyond Toulon Island eastward is found the Melanesian language of Dau; westward of Cheshunt Bay is another Melanesian language, Keakalo.

Westward from the Cape Nelson Peninsula to the British-German boundary all the known languages are non-Melanesian. These are the Adaua (Musa River), Amara (Upper Kunusi), Berepo (Ope River) and Binandele (Mamba River). The last three are closely related.

In the grammar preceding this note Dr. Strong regards the Maisin as a Melanesian language with a strong element of Papuan grammar and vocabulary. If this were so the language would be unique among those spoken in the regions where Melanesian and Papuan forms of speech come into contact. In such contacts, whilst it is generally found that the Melanesian languages have borrowed words from a Papuan neighbour, and have appropriated Papuan idioms,¹ it is hardly ever found that Melanesians have adopted the particles or pronouns of a Papuan language. That is, the elements of the Melanesian language remain unchanged, even though it may be spoken in a Papuan syntax. On the other hand Papuan languages borrow not only Melanesian words and idioms, but in some cases they use Melanesian grammatical particles.² The usual result of the contact of Papuan

¹ As, e.g., the altered position of the genitive in New Guinea. Mukawa, *pipiya natuna*; Wedau, *rava natuna*; Keapara, *auuilimalima nauna*; Dau, *tau natuna*; man his son, man's son. These follow the Papuan syntax as, e.g., Binandele, *embo da mai*; Toaripi, *karu ve atute*; Namau, *a'a na ukua*, man of son; Mailu, *emegi ena oeva*, man his son. In the Melanesian Islands the syntax is: Santo, *notu-n tona*; Efate, *nani natamole*; Malekula, *natin haris*, his-son man; Mota, *nat tanun*; Florida, *ndale tinoni*, son (of) man.

² As, e.g., in Mailu, where the Melanesian (Dau) *ena*, his, takes the place of the proper word *noana*. Dau, *ena numu*, his house; Mailu, *ena uru*. Cf. also Mailu *vaeboebo*, bless (from *eboebo*, good); *vaoni*, send (from *oni*, go), in which *va* is the Melanesian causative prefix.

with another tongue is the breakdown and simplification of the usually elaborate grammar. Such a result is known to have taken place in the Miriam and Kiwai;¹ in the former owing to its use by a mixed population, in the latter owing to the influence of English.

The main features of the Maisin are those of a Papuan language, as may be shown by comparison with Binandele and Mailu, contrasted with Mukawa and Ubir.

§ 1. *Phonology*.—The Maisin phonology is Papuan rather than Melanesian. This is seen in the occurrence of the nasals ng, ngg, mb, nj, nd, which are absent in the mainland Melanesian languages of Eastern New Guinea,² but are found in the Papuan language of Binandele. The Maisin also lacks the Melanesian compound consonants q (kw) and gw, which are found in the neighbouring languages, and the characteristic Melanesian trilled g.

A few sound changes may be noted. Maisin ng is represented by m in Papuan and Melanesian. Cf. line, louse, water in § 14a, and drink, eat, louse, night in § 14b. Nj in Maisin is represented by nd in Binandele and Amara. Cf. egg, fly, § 14a. S in Maisin is lost in Binandele and Amara, but retained in Musa and Adana. Cf. line, pig, § 14a. An initial y in Maisin is absent in other Papuan tongues, Cf. father, water, § 14a, but seems to represent an original guttural in Melanesian words. Cf. Road, sail, § 14b.

Initial r represents Melanesian n. Cf. Come, face, go, hear, § 14b. Maisin f represents Melanesian p. Cf. Fly (v.), lip, thick, white, § 14b.

§ 2. *Nouns*.—The noun formation by a suffix or following word is usual in Papuan. Thus the Maisin *nomba-fafusi*, jealous person, *nanc-fafusi*, workman,³ is similar to the Binandele *ainda-embo*, servant, *beonoari-embo*, thief, and the Mailu *onamaimini-egi*, servant, *oma-emegi*, thief, in which *embo*, *egi* and *emegi* certainly, and *fafusi* probably, mean "person."

The Melanesian languages translate this by a prefix with the same meaning, sometimes by a suffix or following word. Ubir *agir orot*, servant; Mukawa *pisikara bitana*, thief; *giugiu bitana*, teacher; Wedau *tau-nola*, workman; *qalagalai-tauna*, thief; *tau-giuni-na*, teacher, in which *orot*, *bita*, *tau* mean "person," and *na*, "its."

§ 3. *Plural*.—The Maisin plurals by reduplication are found in Binandele with a vowel change as, e.g., *danjing*, plural of *dang*, areca-nut; *sinotano*, plural of *sino*, dog. Also Mailu *oera*, plural of *oera*, child. The irregular plurals are found in Binandele and in some of the Melanesian languages. Cf. Binandele *embomai*, plural of *embo*, man; *asini*, plural of *aro*, wife; Wedau *waivine*, plural of *wavine*, woman; *nelara*, plural of *oroto*, man; Mukawa *baibine*, plural of *wasike*, woman.

¹ In Miriam (Murray Island) the writer was assured by the natives that the language in present use is "cut short," and that the younger people do not use the full forms of words. The Rev. E. B. Riley writes that in Kiwai the younger generation (who are using English) do not understand the proper use of the prefixes and suffixes. In Kiwai these are very complicated.

² Except mb and nd sometimes found in Ubir.

³ Some of the examples quoted are from the Maisin prayer book of the Anglican Mission.

§ 4. *Case*.—The indication of case by suffixes in Maisin may be compared with Mailu and Binandele.

Vocative.—Maisin *-e, -be* : Mailu, *o, eio, egi o ! man ! oera eio !* children !

Dative.—Maisin *-so* : Mailu *-la, uru-la*, to house ; Binandele *-da, oro-da*, to house.

Instrumental.—Maisin *-eng* : Mailu *-ma, aama-ma*, with water ; Binandele *-mi, ung-mi*, with water.

Locative.—Maisin *-c* : Mailu *-de, lavi-de*, in evening ; Binandele *-de, turo-de*, in the evening.

Ablative.—Maisin *-cfe*. Mailu *-ma, aama-ma*, from water ; Binandele *-mi, butu-mi*, from the earth.

The Melanesian languages have nothing comparable except the locative termination *ai*. Ubir *imanai (ima, na, ai)*, hand his in ; *tafanam-ai*, the land in ; Mukawa *murisiai (muri, si, ai)* after their at, behind them ; *kupurai*, the land in.

§ 5. *Adjectives*.—The Maisin adjective, as in Papuan, follows the noun. *Cf.* Mailu *uru ogoda*, house great ; Binandele *ni teka*, bird young. In these languages also the case particle follows the adjective, as in Maisin. Mailu *sipo ogoda de*, price great at ; Binandele *wawa matu da*, shed old to.

The plural form of the adjective is found in Binandele : *nei*, other, plural *nenei* ; *dawa*, same, plural *dawadawa*. In Mailu many adjectives are reduplicate in form, though not plural in meaning, as, *e.g.*, *eboebo*, good ; *arara*, wild ; *emeeme*, white. In the Melanesian languages the adjectives also follow the noun : Mukawa *pipiya gairena*, Wedau *rava aiaina*, man good.

§ 6. *Personal Pronoun*.—When the terminations *ro, no*, which correspond to the Mailu suffix *a*, are removed from the Maisin pronouns, they show no likeness to any of the neighbouring languages, either Papuan or Melanesian. The simplest forms in these may be shown thus :—

	Maisin.	Mailu.	Binandele.	Mukawa.	Boniki.	Ubir and Raqa.	Kiviri.
Singular 1	... <i>a</i>	... <i>ia</i>	... <i>na</i>	... <i>iauku</i>	... <i>taku</i>	... <i>iau</i>	... <i>yau.</i>
" 2	... <i>e</i>	... <i>ga</i>	... <i>imo</i>	... <i>kom</i>	... <i>tum</i>	... <i>om</i>	... <i>om.</i>
" 3	... <i>ai</i>	... <i>noa</i>	... <i>owa, awa</i>	... <i>kona</i>	... <i>touna</i>	... <i>ona</i>	... <i>on.</i>
Plural 1 inclusive	... <i>aiti</i>	... <i>gea</i>	... <i>kaena</i>	... <i>kota</i>	... <i>touta</i>	... <i>ota</i>	... —
" 1 exclusive	... <i>an</i>	... <i>gea</i>	... <i>nakare</i>	... <i>iakai</i>	... <i>takai</i>	... <i>iai</i>	... —
" 2	... <i>en</i>	... <i>aea</i>	... <i>imo-mane</i>	... <i>komi</i>	... <i>toumi</i>	... <i>omi</i>	... —
" 3	... <i>ei</i>	... <i>omoa</i>	... <i>owawa, awawa</i>	... <i>kosi</i>	... <i>touwi</i>	... <i>osi</i>	... —

This shows clearly the separation of the Maisin from the Melanesian, as well as its position as an independent Papuan language. Some Papuan languages show the inclusive and exclusive forms of the pronoun in the first person plural : as, *e.g.*, Binandele, *kaena* (incl.), *nakare* (excl.) ; Bongu *jig* (incl.), *ga* (excl.).

§ 7. *Possessives*.—What Dr. Strong calls the Possessive Pronoun in Maisin is the simple stem as given in the preceding table with the word *kang*, elsewhere translated "side," "neighbourhood." It is used with nouns : *arang ai tamati-*

dombung kang, thing thy neighbour side, *i.e.* thing of thy neighbour. The Mailu adds the syllable *na* in a similar way: *ina*, mine; *gana*, thine; etc. The Binandele forms are irregular: *nato*, mine; *ito*, thine; *ounda*, his. Both Mailu and Binandele make no distinction between adjective and pronoun.

The Possessive adjectives in Maisin are very strange. They appear to be imperfect imitations of Melanesian, as only the first and third persons singular and the first exclusive and second plural appear to agree. But *ari* may represent *ani*, whilst *ang* and *eng* may represent *am* and *em*, and thus be compared with the Mukawa *ama* and *ami*.

	Maisin.	Mukawa.	Boniki.	Ubir and Raqa.	Mailu.	Binandele.
Singular 1 ...	<i>au</i> ...	<i>au</i> ...	<i>uku</i> ...	<i>au</i> ...	<i>ina</i> ...	<i>nato</i> .
" 2 ...	<i>ai</i> ...	<i>am</i> ...	<i>am</i> ...	<i>am</i> ...	<i>gana</i> ...	<i>ito</i> .
" 3 ...	<i>ari</i> ...	<i>ana</i> ...	<i>ina</i> ...	<i>ana</i> ...	<i>ena</i> ...	<i>ounda</i> .
Plural 1 inclusive ...	<i>aiti</i> ...	<i>ata</i> ...	<i>ita</i> ...	<i>atu</i> ...	} <i>gege</i> na	<i>kaenato</i> .
" 1 exclusive ...	<i>ang</i> ...	<i>ama</i> ...	<i>isi</i> ...	<i>ai</i> ...		<i>natokare</i> .
" 2 ...	<i>eng</i> ...	<i>ami</i> ...	<i>ami</i> ...	<i>ami</i> ...		<i>itomane</i> .
" 3 ...	<i>e</i> ...	<i>asi</i> ...	<i>aki</i> ...	<i>asi</i> ...	<i>omana</i> ...	<i>ebomaida</i> , etc.

§ 8. *Suffixed Pronouns*.—The objective suffixes are strange in a Papuan tongue. In Mailu the object precedes the verb: *noa ma omoa iosawosiatama*, he them left; *torea omuna ma noa eriamu*, girl one him saw. Also in Binandele: *kaena owa gana*, we him will-watch; *imo nakare boteda kundo*, *dawate-i?* you us in-boat having-fetched will-(you)-take?

In Maisin the first and second persons singular and the first inclusive and second plural have the same form *-reng*. A similar grouping is found in Miriam, where the object is indicated by a prefix: *napiti*, he strikes me or thee; *ipiti*, he strikes him; *dipiti*, he strikes us or you. Other Papuan tongues make a similar grouping with the subjective prefixes to verbs, as, *e.g.*, Kiwai: *narogo*, I or we say *rarogo*, thou sayest, he says, you or they say.

The Possessive suffixes are also strange and suggest partial borrowing from a Melanesian language. The first person singular *u*, first plural inclusive *ti*, and third plural *ai* are not very different from the *u*, *ta* and *si* with the same meanings and use in Ubir. The Maisin *ai* perhaps stands for *ahi* (*i.e.*, *asi*). These terminations in Mukawa are *-ku*, *-at*, and *-si*. The Maisin *-ang* used in all other persons and numbers may represent *m* or *n* of the Ubir, as second singular *m*, second plural *mi*, third singular *na*. The first plural exclusive presents a difficulty, as no Melanesian language in the neighbourhood of Maisin has *m* in the suffix for this person, though it is usually *mai* in other Melanesian languages of New Guinea. It is, however, probable that *-ang* is not a pronominal termination at all, but simply the common noun ending *ng*.¹

¹ In the Maisin vocabulary 14 names of parts of the body are said to take the suffixed pronouns. Of these 14, 9 are evidently Melanesian words. Of 6 other names of parts of the body which do not take the suffixes 5 are Melanesian.

§ 9. *The Verbal Auxiliary*.—The particles used with verbs to mark person and number in Maisin are evident loans from the Melanesian. They are almost identical with Mukawa, and differ very little from those used in other Melanesian languages of the north-east coast. Cf. :—

	Singular.			Plural.			
	1.	2.	3.	1 incl.	1 excl.	2.	3.
Maisin ...	<i>a</i>	<i>ku, ko</i>	<i>i, e</i>	<i>ta</i>	<i>ka</i>	<i>ku, ko</i>	<i>ti.</i>
Mukawa ...	<i>a</i>	<i>ku</i>	<i>i, e</i>	<i>ta</i>	<i>ka</i>	<i>ko</i>	<i>te.</i>
Ubir ...	<i>a</i>	<i>u...</i>	<i>i...</i>	<i>ta</i>	<i>a...</i>	<i>o...</i>	<i>i, si.</i>
Raga ...	<i>a</i>	<i>u...</i>	<i>i...</i>	<i>ta</i>	<i>a...</i>	<i>o...</i>	<i>i.</i>
Wedau ...	<i>a</i>	<i>u...</i>	<i>i, e</i>	<i>ta</i>	<i>a...</i>	<i>o...</i>	<i>i, e.</i>

These prefixes are quite foreign to Mailu and Binandele, and to other Papuan languages.

§ 10. *The Verb*.—The verbal suffixes in Maisin show no likeness in form and use to Mailu or Binandele, and are not comparable with the Melanesian languages, except so far as they may be of an adverbial nature as Dr. Strong suggests. In expressing present time by reduplication, the Maisin agrees with the Melanesian: Maisin *i-fefe*, he is falling; Mukawa *e-pekupeku*, Wedau *e-peupeu*.

The Maisin terminations are comparable with the Toaripi and Namau far to the west, which express tense by a change of ending.

Toaripi: *putoi*, falls; *putoipe*, fell; *putoita*, fell (yesterday).

Namau: *arana*, falls, or fell; *ara'anake*, fell, has fallen; *ara'akana*, will fall; *ara'ne*, may fall.

In Namau the negative is similar to Maisin and is formed with prefix and suffix: *a'-ara'nake-a*, did not fall, (*inamu*)-*a-oinake-a*, did not see. Cf. Maisin *isa-ikita-ki*, did not see.

In Mailu and Binandele the verb terminals change for number, person and tense.

§ 11. *Adverbs*.—Adverbs derived from the cases of nouns are found in Binandele and Mailu. Thus Maisin *inke* (here), *nenke* (there), from *in-ang* (this), *ne-ng* (that), are translated by Binandele *ein-da* (here), *awn-da* (there), from *eiwa* (this), and *awa* (that), and by the Mailu *eva-de* (here), and *ne-de* (there), from *eva* (this) and *ne* (that). The Maisin adverb formed from an adjective by the objective or instrumental suffix *-ng*, finds a parallel in the Mailu use of the locative *de*: *ogoda-de*, greatly.

§ 12. *Prepositions*.—What are called prepositions in Maisin are really postpositions, and are used in the same way as in Papuan languages. But with compounds the Maisin construction is more like the Melanesian than Mailu or Binandele. In the two last languages the possessive pronoun is not used with nouns. The following phrases illustrate the construction in Maisin, Mailu,

Binandele, Mukawa and Ubir. A literal translation and the separate elements of compounds are given in brackets.

1. *To the children*: Maisin, *jameng kame* (children side-at [*kame=kang-e*]); Mailu, *oówa iva la* (children those to); Binandele, *mamai-núle* (children-to); Mukawa, *natunatusi kaurisi* (children-their to-them); Ubir, *fusisi nanatus* (to-them children-their).
2. *Under the earth*: Maisin, *to kafiye* (earth under-its-at [*kafiye=kafa, ari-e*]); Mailu, *one ausu de* (earth inside-at); Binandele, *butu da lambe da* (earth of under at); Mukawa, *tano gaburinai* (earth under-its-at [*gaburi-na-ai*]); Ubir, *tafunam babanai* (earth under-its-at [*baba, na, ai*]).
3. *Inside thy gate*: Maisin, *ai kasimon terere* (thy gate inside-its-at [*terere=tere, ari-e*]); Mailu, *gana urunoga ausu de* (thy gate inside at [*urunoga=house opening*]); Binandele, *ito be do da* (thy door front at); Mukawa, *am matamketeiai* (thy gates-at [*matamketei=gates, opening of path, ai*]); Ubir, *am kayawan amonai* (thy gate inside-its-at [*amo, na, ai*]).
4. *Before me*: Maisin, *rouse* (face-my-at [*ro, u, s? e*]); Mailu, *ia ina isana de* (I my face at); Binandele, *na doda* (I face-at); Mukawa, *naokuai* (face-my-at [*nao, ku, ai*]); Ubir, *nauui* (face-my-at [*nau, u, ai*]).

§ 13. *Numerals*.—The Maisin numerals differ from both Papuan and Melanesian. Cf. :—

	1.	2.	3.	4.	5.
Maisin ...	<i>sesei</i> ...	<i>sandi</i> ...	<i>sinati</i> ...	<i>fusesse</i> ...	<i>fakete.</i> (hand)
Mailu ...	<i>omu</i> ...	<i>ava</i> ...	<i>aiseri</i> ...	<i>tourai</i> ...	<i>ima.</i> (hand)
Binandele ...	<i>da</i> ...	<i>tote</i> ...	<i>tamode</i> ...	<i>ipa ao pasido</i> (hand-little finger- stuck up)	<i>ipa da.</i> (hand one)
Mukawa ...	<i>kesana</i> ...	<i>ruamo</i> ... (two-only)	<i>tonu</i> ...	<i>bata</i> ...	<i>nima masiana.</i> (hand-one)
Ubir ...	<i>kaitamom</i> ... (one-only)	<i>rusi</i> ...	<i>tonu</i> ...	<i>bata</i> ...	<i>nima.</i> (hand)
Raqa ...	<i>taimona</i> ... (one-only)	<i>ruabi</i> ...	<i>toni</i> ...	<i>bati...</i> ...	<i>ima.</i> (hand)
Boniki ...	<i>sago</i> ...	<i>rua</i> ...	<i>aroba</i> ...	<i>rua-ma-rua</i> (two-and-two)	<i>ima-i-kore.</i> (hand-is-finished)
Kiviri ...	<i>kaitamom</i> ... (one-only)	<i>ruam</i> ...	<i>tonu</i> ...	<i>bat</i> ...	<i>nim.</i> (hand)
Oiun ...	<i>taimonomon</i> ... (one-only)	<i>rowaba</i> ...	<i>tun</i> ...	<i>fen</i> ...	<i>uma-ti-morob.</i> (hand-is-finished)

The higher numerals in Maisin are built up more like Melanesian than Papuan. *Eg.* Seven: Maisin, *faketi-tarosi-taure-sandi* (hand one-side other-side two); Mailu, *ima lilia uva* (five increased two); Binandele, *ipa nei da toro de* (hand other of finger on); Mukawa, *nima masiana iaro masiruamo* (hand one finger other two); Ubir, *nima rebana rusi* (hand its-top [is] two).

The word for twenty in Maisin, *tamati sesei* (man one), may be compared with the Melanesian, which generally adds a verbal phrase; as, e.g., Mukawa, *sebari kesana i rabobo*; Kiviri, *oroto kaita i rabobo* (man one is finished); Ubir, *oroto i rabobo*; Raqa, *oroto i morobo*; Oiun, *oroto taimonomon i morob* (man is finished).

§ 14. *Vocabulary*.—The Maisin presents a very mixed vocabulary. In this respect the only language which it resembles is the Mailu, which has also borrowed many Melanesian words. This probably results from the fact that Maisin on the north and Mailu on the south are the most easterly Papuan languages on the mainland of New Guinea, and so have been longest exposed to the Melanesian influence coming westward.

a. The following appear to be Papuan¹ words in the Maisin vocabulary:—

Areca, *kara*: D. *araa*, K. *fuga*.

Arm, *fuke*: D. *bika*, A. *agi*.

Club (star), *misi*: A. *misi* (pine-apple club).

„ disc, *sambia*: Mu. *ambi*, A. *tumbi*, Mulaha *sabia*.

Crocodile, *guma*: D. *wama*.

Dog, *taru*: D. *dari*, Ma. *sari*.

Ear, *kari*: Mu. *kari*.

Egg, *munju*: B. Am. *mundu*, D. Ma. *muruu*.

Elbow, *ungobe*: B. *umbugo*, Y. *ugube*.

Father, *yabe*: D. *abai*, Ma. *apai*.

Fire, *wo*: D. Ma. *eu*.

Fly, *jinonji*: Mu. *ginonda*.

Go, *ro*: Am. *irou*.

Hair, *kesa*: Mu. *sega*.

Lime, *song*: B. *ong*, Am. *o*, Mu. *soma*.

Louse, *tung*: Mu. D. *tuma*, N. *umaa*.

Pig, *siko*: Mu. *siko*. Cf. A. *sika*, B. *sino*, dog.

Sago, *bayau*: Mu. *baiyau*. This may be by metathesis the Melanesian *rabia*.

Skin, *ando*: B. *aincto*, Mu. *andora*.

Spear, *ganang*: D. *gara*.

Spit, *kasufe*: Mu. *fisoga*, B. *kosiva*.

Tooth, *nua*: M. *nuga*.

Water, *yung*: B. *ung*, Am. *umu*, Mu. *yuig*, *ugo*, Y. I. *umu*, D. Ma. *uama*.

Weep, *tesi*: Mu. *ji*, B. *ji*, tears.

Yam, *kuta*: A. *kuta*.

Yellow, *gabo*: Mu. *kambe*, D. *qambuqabura*.

¹ Papuan languages: A. Adaua, Am. Amara, B. Binandele, Be. Berepo, D. Domara, I. Iworo, K. Koiari, Kt. Koita, Ma. Mailu, Mu. Musa River, N. Neneba, Y. Yoda.

b. With Melanesian languages¹ there appear to be the following agreements. Some of these are very like the corresponding word in Papuan:—

Ashes, *isang*: Muk. U. R. *isara*, Ki. O. *isar*.

Belly, *tina*: Cf. R. *kabu-tina*, bowels; Rubi. *tina*, Suau, etc., *sina*, bowels.

Blood, *ta*: Ki. *tar*, W. U., etc., *tara*. Cf. D. *nara*, Ma. *nara*, Kt. *tago*.

Boat, *ka*: Muk. *waka*, R. Ki. *wa*.

Breast, *susi*: Muk. U. Bo. G. *susu*.

Butterfly, *bimbaba*: Muk. R. *ara-bembemta*, Kw. *kara-bimbim*. Cf. D. *bebe*.

Buy, *kuma*: Muk. *kunei*, W. *unei*, sell.

Come, *vai*: W. *nei*, O. *na*.

Die, *mate*: Suau, *mate*. Apparently not used in languages of the N.E. coast.

Dog, *taru*: R. *saruve*, O. *haruve*. Cf. D. *dari*, Ma. *sari*.

Drink, *kung*: Muk. Ku. *toma*, W. *umai*, etc.

Earth, *toa*: W. Bo. G. *doa*.

Eat, *kang*: Muk. Bo. G. *kani*, *kam*, W. *ani*, *am*.

Eye, *mata*: Muk. U. W., etc., *mata*. Cf. Mu. *mata*.

Face, *ro*: Mu. W., etc., *nao*.

Feather, *wuwudi*: Kw. *bubuni*. Apparently not used in other languages of N.E. Coast.

Fly (*v.*), *rufi*: Muk. *roborobo*.

Foot, *ke*: Muk. Bo. G. *kae*, W., etc., *ae*. Cf. B. *tai*, Be. *tei*.

Go, *ro*: Muk. W. *nae*, R. *na*.

Hard, *wena*: Ki. *wawanin*, O. *wanivanin*.

Hear, *rua*: Muk. *nonora*, W., etc., *nonori*.

Lip, *fufu*: Cf. Motu, Keapara, *bibi*. Also cf. Mu. *lobu*.

Louse, *tung*: Bo. G. *tuma*. Cf. Mu. D. *tuma*, N. *umaa*.

Man, *tamati*: Cf. Dobu. *tomota*, Sariba *tamoai*. Cf. Mu. *tamata*.

Mosquito, *namu*: R. *namo*, U. *nanamo*, G. Bo. *namo-kiri*.

Mother, *yo*: W. R. U. *al'o* (nearly *adho*), Ki. *aio*.

Mouth, *kawa*: Muk. G. Bo. *kawa*, U. R. Ki. *awa*.

Neck, *iko*: R. *sika*, O. *seko*.

Night, *foing*: Muk. Ki. *pom*, Sariba, Tubetube, *poni*.

Nose, *isu*: R. O. *iu*, Suau, etc., *isu*.

Outrigger, *samang*: U. *samani*, Ki. O. *sama*, Mu. *gamani*.

¹ Melanesian languages: Bo. Boniki, G. Galavi, Ki. Kiviri, Muk. Mukawa, O. Oiun, R. Raqa, U. Ubir, W. Wedau. Cf. *Rep. Cambridge Anthropol. Exped.*, vol. iii, pp. 391-412 and 482-503.

- Pipe, *wau* : w, etc., *baubau*.¹
 Road, *yeta* : W. U. R. Ki. *eta*, Muk. Bo. G. *keta*.
 Sago, *baiyau* : W., etc., *rabia*. Cf. Mu. *baiyau*.
 Sail, *yaba* : Rubi *geba*. Cf. Keapara *gepa*, mat. Cf. Ma. *epa*.
 Scratch, *kari* : R. *kairi*, U. Ki. *gagara*.
 See, *kite* : Muk. G. Bo. *kitai*, U. Ki. *itai*.
 Smoke, *kasu* : Muk. *kasu*.
 Snake, *moti* : Muk. W. *mota*.
 Spit, *kasufe* : G. *sova*, W. *ovai*. Cf. Mu. *fiscga*, B. *kosiwa*.
 Stand, *veisi* : Kw. *lisi*, Muk. *msiri*, U. *misiri*.
 Star, *damana* : R. *damani*.
 Stone, *kimati* : Bo. G. *wakima*, W. *g'aimi*, Muk. *akima*, U. Ki. *agim*.
 Sugarcane, *to* : W. Muk. Bo. G. *tom*, Motu *tou*, Galoma *obu*.
 Sun, *ya* : R. *vela*, O. *vela*, Kw. U. Ki. *vera*. Cf. B. *vevera* hot.
 Thick, *fotuna* : W. *putopotuna*, Wamira *potupotuna*.
 Tongue, *me* : R. *meme*, W. *mena*.
 Tooth, *nua* : Muk. *nibo*, W. *ivo*. Cf. Mu. *nuga*.
 Tree, *ka* : G. *kai*, R. O. *ai*.
 White, *foe* : Muk. Bo. *poepoena*.
 Wife, *sauki* : W. U. R. *awa*, Muk. *kaoa*, G. Bo. *kawa*.
 Yam, *kuta* : U. R. Ki. O. *uta*. Cf. A. *kuta*.

The Maisin language would thus appear to be originally a Papuan language, which has adopted an abnormal number of Melanesian words. It has also appropriated some Melanesian particles, the verbal auxiliaries entirely, and partially adopted others, the possessive suffixes, and the use of possessives with the postpositions. But in other respects its grammar is Papuan. The language of Mailu on the south coast is in the same mixed condition as regards the vocabulary. There is little direct evidence of a connection between Maisin and Mailu or Binandele. Hence, Maisin may represent a survival of a former Papuan population in Eastern Papua.

¹ In Dr. Strong's Grammar, p. 14, *wau* is "pipe" and *mevavi*, "banana," but in his vocabulary *wau* appears for "banana."

FURTHER RESEARCHES INTO KIKUYU AND KAMBA RELIGIOUS BELIEFS AND CUSTOMS.

[WITH PLATE XLIV.]

BY C. W. HOBLEY, C.M.G., East Africa Protectorate.

IN a recent number of the *Journal of the Royal Anthropological Institute* (vol. xl, p. 428) the author published a paper on the beliefs known as *thahu* among the Kikuyu, and its connection with the circumcision rite, and it was found to give such an insight into the influence which the belief in the ancestral spirits has upon the life of the natives, that the line of enquiry has been further continued in Kikuyu and extended to Ukamba. With regard to the latter area the author is greatly indebted to the assistance of Hon. C. Dundas, who, while serving in Kitui district, has made careful enquiries on many points.

One interesting feature now elucidated is the dying curse—the *kirume* of Kikuyu and *kiume* of Ukamba; the general idea of this being that a dying person can put a curse upon property belonging to him, or can lay a curse upon another person, but only upon a person belonging to his own family; thus, for example, the head of a village, when dying, can lay a curse on a certain plot of land owned by him and will that it shall not pass out of the family, and if a descendant sells it, it is believed that the speedy death of the offender is the result. A case recently came to the author's knowledge where an elder was offered a very tempting sum for a particular piece of land, and equivalent land elsewhere, but it was refused by the owner because it had come down to him with a *kirume* on it. This is a very interesting revelation, because when one comes to consider it, it is undoubtedly the genesis of a last will or testament. Furthermore, it is the rude beginning of our principle of "entail." It moreover shows that these people have reached the stage of individual tenure in land.

In some of the additional examples of *thahu* which are cited later, cases will be noted in which the hut is affected, and if the curse is not removed, it has to be forthwith demolished; this feature appears to be worthy of note, and it may in some measure account for the low type of domestic architecture among these tribes, for it becomes obvious that there is but little incentive to build large permanent structures if there is a chance that, owing to the incidence of a *thahu*, the owner may have to demolish it at any moment. The author's attention was first called to this point by a learned French missionary who has studied the Kikuyu for many years. A further point upon which enquiries have been made is the attitude of the native mind towards the question of punishment for murder, and the effect of the

substitution by Government of the *lex talionis* in murder cases for the native law of compensation.

Much doubtless remains to be learnt upon all these matters, and it is difficult to decide the point when such comparative finality is reached in any line of research as to warrant publication. It is, however, submitted that as soon as one is convinced of the principles governing a certain group of customs that it is best to render them accessible to other workers, as this should stimulate further enquiry, and the wider the discussion the better.

The effect of the belief in the ancestral spirits, the *Aimu* of Ukamba and *Ngoma* of Kikuyu, upon the actions of members of these tribes has, it is believed, never received much attention from those concerned in their administration, and consequently its influence has not received due consideration; it is, however, maintained that the question is not merely an academic one, but of the greatest practical value to the administrator, the missionary, and the student. This influence of the spirits, or the belief in this influence, which is in effect the same thing, is the real key to a close understanding of the native mind; the natives' life is so permeated with these beliefs, and they have consequently such a profound effect on their actions, that until we thoroughly understand this question we are bound to be perpetually brought face to face with what appear to be absolute enigmas. Progressive Europeans in East Africa are apt to pooh-poo these beliefs, and to feel very impatient with them, as they undoubtedly, in general effect, tend to conservatism, and to check development according to our standards. This is probably the case, but the fact must, however, not be lost sight of that on the whole they act as moral restraints, and perform the functions which a religion fulfils among people of a higher culture, and even if Government formally abolished them by legislation it would not affect the belief one iota, and before these beliefs are officially discountenanced we must be quite certain that we have something better and something equally adapted to the native mind to put in their place, or blank materialism will result, and the effect of this negation of faith and the freedom from all moral restraint upon a savage is appalling to contemplate. There is practical evidence of this in the criminal tendencies evinced by numbers of natives who have drifted into the up-country towns in British East Africa and cut themselves adrift from their tribal life. As far as can be seen we have nothing to hand at present which is quite suited to people at this stage of culture, and it would therefore appear that the best policy will be carefully to study their present beliefs and encourage them, at the same time with the help of that knowledge, and influence based on that knowledge, to induce the people gradually to give up any repugnant features of their ritual and retain the better elements. It is of great interest to note how the more intelligent elders respond to enquiry into their beliefs once they are convinced that such enquiry is undertaken in the proper spirit, and nothing convinces them so much of the *bona fides* of our intentions as a sympathetic study of their own customs and a demonstration of one's knowledge of them.

FURTHER EXAMPLES OF THAHU AND SPIRIT BELIEFS.

Kikuyu.

Kikuyu.—1. If a tree falls on a hut it is considered extremely unlucky, the hut will not be abandoned, but it is necessary for the head of the village to kill a ram ; it is led round the village before being killed. If this was not done, the owner of the village, or at any rate the woman who lived in the hut, would become the victim of a *thahu* or curse. The owner of the village, however, may not enter the hut until the sacrifice has been made to appease the *ngoma* or ancestral spirits who inflict the *thahu*. This applies to both sections of the tribe, viz., those circumcised Kikuyu fashion and those Masai fashion.

2. If a jackal (*mbwei*) comes into a village and calls at night when the inhabitants are asleep, the people say it is a spirit calling for meat, and it is considered very unlucky, and the owner of the village will next morning take a male goat (*nthenge*), lead it round the village, and kill it at about the spot where the jackal called out. Pieces are cut from the loin, lungs, heart, and each of the limbs, and piled up into two little heaps as offerings to the *ngoma*, who are believed to have called out through the jackal as medium. The sex of the *ngoma* is not known, so to make sure two little heaps are laid out, one for any male spirits and one for any female spirits. No bone must be broken in any meat offered to the spirits.

The next morning the elders go to the place where the two offerings of meat were deposited and pour out a libation of beer on each. They then address the *ngoma* as follows: "O ye spirits, take this meat and beer and give us goats and cattle and children, and do not bring *thahu* to this village." The people of both circumcision guilds follow this procedure.

3. If a certain snake, called *nyamuyathi* by the Kikuyu, enters a hut, it is necessary to pour some milk or fat on the floor for the reptile to drink ; it may drink and leave, or it may not. If it does, well and good ; if not, the owner of the village has to kill a sheep, cook some of its fat, and pour it out in the hut, saying at the same time: "We offer you some fat to drink, we beg of you to leave us." It is believed that an *ngoma* or spirit has come in the guise of a snake, and on no account must such a snake be killed. After the sacrifice of the sheep has been made the snake will always go, but it mysteriously disappears, no one sees it leave. If the snake stayed on in the hut, the wife who owned the hut and her children, would be *thahu*.

4. If a stranger comes to a village and dies in a hut there, the hut is completely abandoned if the owner belongs to the Kikuyu guild ; a big hole is broken away in the side of the hut by taking out several of the wall slabs or planks (*Mihirigo*) ; the corpse is left inside and the hyænas come and carry it off. The hut is then left to fall into ruin, and nothing is removed from it, such as cooking pots, beer, jars, etc. The men who break the hole in the wall are even

considered unclean, the same as if they had handled the corpse, and after performing the duty go straight off into the bush and stay there until they have bathed and been anointed with *tatha* (the stomach contents of a sheep); finally a very old woman comes and shaves their heads, they are then ceremonially clean and can return to their families. A medicine man (*mundu mugo*) has, however, to come and purify the whole village in the usual way.

If the owner of the village belongs to the Masai guild the consequences are not so serious. The family leave the hut temporarily until the corpse has been carried off by the hyænas; they then kill a goat or sheep near the door of the hut, take a little of the fat which occurs round the stomach of the animal, and place a small portion on the cooking fire of each hut. This removes the *thahu* due to the death of the stranger and all is well.

5. If a new hut is built in the village and the wife enters it and finds herself menstruating on the day she lights the first fire in it, the hut has to be broken down and demolished the very next day. The woman must on no account sleep a second night in it; a *thahu* is on both the woman and the hut. A medicine man has to be called in ceremonially to purify the woman and her children, a new hut is built and the medicine man ceremonially sweeps it out with a broom made of the twigs of the *Mukenya*, *Mahoroa*, and *Michatha* bushes; he then collects the sweepings and throws them outside the village. This custom applies to both sections of the tribe.

This custom also has another phase which is as follows:—If the day a hut is built the wife, who is the owner of the hut, is away from the village and finds herself menstruating, she cannot even return to the village, but has to seek shelter with neighbours for three days. On the fourth day she returns bringing with her a gourd of water. When she reaches the *thomi*, or meeting place outside the village, she pours some of the water into a half gourd and washes herself. She can then enter both village and hut without further ceremony. This applies to both sections of the tribe.

6. When a new hut is built the first fire to be lit in it must be brought from a fire out in a *shamba* or field, not from another hut. If fire cannot be obtained from a *shamba* it is first obtained from another village; with this a fire is lit in a *shamba* and burning sticks are taken from that fire. The Kikuyu state that they are afraid to get fire direct from another village in case they bring some unknown *thahu* along with it or with the firewood; they say it is such a great risk, particularly for the children, who might get thin and ill in consequence.

Two or three days after the first fire has been lit a male sheep has to be slaughtered by the owner of the village. The meat is cooked in the hut, and the blood is poured out on the village *thomi*, then beer is brewed and a libation of it is poured out inside the hut near the door and on the *thomi* or village green. The above applies to those circumcised Kikuyu fashion. Those circumcised Masai fashion make the first fire in a new hut by friction with a firestick, and the wood for the first fire must come from two of the trees sacred to this branch, viz., *Mutamaiyu* and *Mutarakira* (Juniper).

There is one important point in connection with *thahu* in Kikuyu which previously escaped notice, and that is, that an owner of a village cannot enter or sleep in a hut which has been ceremonially purified until two days have elapsed if he belongs to the Kikuyu circumcision guild, or for two months if he belongs to the Masai guild. This prohibition has a very practical effect, for in cases where the whole village has to be purified to rid it of some serious *thahu* the owner of the village would naturally be homeless for either two days or two months, as the case may be. To obviate this difficulty the purification ceremony is carried out in two instalments: one-half of the village is done first, and a little later the medicine man returns and performs the lustration ceremony on the other half; the people are not thus greatly inconvenienced.

A variant of the word *thahu* in Kikuyu which is often used by the old men is *Nzahu*.

It appears upon enquiry that it is not every elder in Kikuyu who has the power of removing *thahu*, but only those who have lost a wife who is a mother.

If a wife dies and leaves children the husband calls in two *athuri ya ukuu* (these are the very senior elders), a *muthuri ya kiamu* (elder of council), and an old woman past the age of child bearing.

They kill a lamb, *mwati*, or a ram, the elders then take the *tatha* (stomach contents), pour them into a half gourd, *njeli*, dip a bundle of leaves in the *tatha* and sprinkle the hut. This ceremony is believed to remove the *thahu* left by the death from the father and his children, the half gourd is then placed at the bed head of the father. A medicine man finally comes and purifies the whole family. If his generation or age is junior to that of the elders who come to perform the above ceremony he cannot participate, but has to sit apart.

After this the father is considered to be eligible to take part in ceremonial connected with the removal of *thahu*, but only if he is a qualified *muthuri ya Kiamu ya imburi nye* or *mburi ithano*, that is to say, if he has reached the grade to which the entrance fee is 4 goats or 5 goats.

Ukamba.—In *Ukamba* *thahu* is called *thabu* or *makwa*, and the popular attitude towards it is very similar to that existing in Kikuyu, but it does not appear to be such an important factor in the lives of the people, and for some reason or other does not seem to have reached such a high development. It is looked upon with awe, but people generally dislike to talk about it, and in consequence the bulk of the elders can only give one or two examples of it, and say the only people who can give much information are the *Atumia ya makwa* (elders of *makwa*) and *Atumia ya ukuu* (elders of *ukuu*), and those important people undoubtedly endeavour to envelop the beliefs in mystery.

The incidence of *makwa* or *thabu* does not appear to be nearly so frequent in *Ukamba* as it is in Kikuyu. In fact, the A-Kamba sneer at the A-Kikuyu, and say they are full of *makwa*. Moreover, owing to the reticence of the A-Kamba on the subject, it is not easy to collect examples. Mr. C. Dundas, who has assisted in this enquiry, had to pay a fee of a bullock for himself and a goat for his

interpreter before he could get any information on the subject. These fees admitted him to the grade of *Mutumia ya nkuu*. All enquiries, however, had to be conducted in a low tone, and no one was allowed to listen. The following are all that have been discovered up to date, but there is little doubt that others exist :—

(1) On the death of a man the village is unclean and must be purified by the elders, and during the period of purification strict continence must be observed by all those resident in the village. If a man fails to observe this rule he will become afflicted with *makwa*; also the woman, providing she belongs to the village where the death has taken place. Moreover, if a daughter of the deceased who is living away from the village visits the village within eleven days of the death of her father she will become afflicted.

The curse is removed in the same way in either of the above cases. A brother of the deceased must first cohabit with his wife. He then brings a goat and the afflicted person brings some beer. One of the elders then collects twigs of the *movu*, *mulale*, and *muteme* bushes; these are pounded up with water, and the mixture is called *ngũndu*. Some of the *ngũndu* is poured down the goat's throat, the idea probably being ceremonially to purify the animal. The patient then walks three times round the goat, and the animal is then lifted up by the elders. Its throat is cut and the blood spurts out over the patient's head and body. A piece of stick is then placed under his left arm and another between the toes of his right foot; two elders take hold of each of these sticks and pull them away saying, "We purify you." Possibly the belief is that by some magical process the defilement is passed into the sticks. Subsequently the brother of the deceased again cohabits with the same wife, and the patient is then cured.

(2) A man may not lie on his mother's bed, or even take any article from it, or he becomes *makwa*. Upon the death of his father he inherits, and is then entitled to use, his father's bed, which was, of course, also occupied by his mother, and it is therefore necessary that he should be protected from any evil on this account. So the elders then make the mixture called *ngũndu*, and smear the soles of his feet with it; they also sprinkle the framework of the bed. They say that if this was not done the son would become *makwa* if he so much as put his foot on the bed. If a son becomes *makwa* through transgressing this law before his father's death he has to be purified as in the previous case. It is suspected that this prohibition was devised as a safeguard against incest, but if the theory is correct the natives seem to have forgotten the reason.

Reference is invited to the author's work on the *Ethnology of the A-Kamba* (Camb. Press), p. 65, the danger to a girl if a stranger touches her menstrual blood; this is a clear case of *makwa*, which falls on the girl in consequence.

Some of the prohibitions mentioned on p. 102 are also cases of *makwa*, and on p. 97 there is an account of a man who was suffering from *thabu* or *makwa*. It is regretted that at the time the importance of the phenomena had not been fully recognised.

(3) If a man dies and leaves young wives the sons usually take them over;

of course, a son could not marry his mother. A son cannot, however, succeed to one of his father's wives until the elders have performed certain ceremonies. If he cohabits with her before these are carried out he will become *makwa*.

To remove the curse in this case the ceremonial is as follows:—A paternal uncle of the offender collects the elders and provides beer for them; the woman concerned brings a goat. The elders make some of the *ng'ondu* mixture, and this is handed to the patient, who pretends to pay it to the elders. The elders then bring a branch of a tree called *muuti* and tell him to pay it to his uncle. He does so by throwing it at his uncle, saying, "I pay you before the elders." This looks as if the spirit of the deceased father is offended, and ceremonial payment has to be made to the brother of the deceased, who represents him for the time being.

A piece of wood about 15 inches long, cut from a *mukingezia* tree, is then brought. This is first inserted into the vaginal passage of the woman, and then the man's penis is touched with it twice or thrice. One of the elders then carries the stick away and throws it across a river saying, "I throw this evil away." In the evening the uncle cohabits with the woman. The *makwa* is thus believed to be removed, but the man can never have anything to do with that woman again. He can, however, marry another of his father's wives after the elders have performed the necessary rites.

(4) After the death of a father none of the sons may take honey from the father's hives until the paternal uncle has first done so. Any who break this law will become *makwa*. It can, however, be removed by the uncle, who brings a sheep, and the uncle, the elders, and the mother of the patient lead the sheep three times round the patient; at the conclusion of the third turn the sheep is lifted up and its throat is cut, and the blood is allowed to spurt over the patient. The animal's throat is cut by one of the elders, whose forearm is held by the uncle and the mother. After this ceremony the patient is believed to be cured, and he can take honey. It may be that this was devised to prevent a son rushing off into the woods after his father's death and annexing any honey he found, irrespective of whether such and such a hive would fall to his share when the elders decided as to the division of the estate.

(5) If a woman loses a young child by death it is necessary for her to have her breasts ceremonially purified by a qualified elder, or it is believed that any future children she may bear will die of *makwa*.

(6) If a man cohabits with a married woman in the woods while the cattle are out grazing, it brings *makwa* upon the cattle and they will die. The woman, however, is generally afraid of evil falling on the precious cattle, and confesses. The cattle are then taken out of their kraal, medicine is placed on the ground at the gate, and they are then driven back over the medicine, and this lifts the curse. The woman also has to be ceremonially purified by an elder.

(7) If a woman who has borne children is forced by a man it is believed that a curse will fall on the children and they will die. The evil can, however, be

averted if she is purified by an elder; the man has to pay a goat and the expenses of the purification ceremony.

(8) If a hyena defæcates in a village during the night there is a *makwa* on the village, and the elders have to kill a goat and purify (*tapisha*) the village.

(9) Some medicine men have the power to place a *makwa* upon one of their wives who is a particular favourite. This is done by medicine, but the details are kept secret. If a man seduces the woman in question it is said that death will ensue unless he can by payment induce the medicine man to lift the curse.

(10) If a person goes to the village from which his mother came and eats food there, and if by any chance a death has occurred in that village and the funeral ceremonies are not completed, he will be stricken with *makwa*. Even if a wife goes to pay a visit to her father's village under the above circumstances the result is the same. This form of *makwa* can only be removed by a medicine man.

The little known Thaka or Theraka people in the Tana Valley south-east of Kenia also believe in *makwa*, and use the same word for it. A few examples have been collected by Mr. C. Dundas, and are given below:—

(1) If a village is ceremonially unclean for some reason or other, and a man cohabits with a person of the opposite sex before it is purified, they are both stricken with *makwa*.

(2) If a man belonging to a village has been absent on the occasion of a death and at the necessary subsequent purification of the village, he may not enter until a sheep has been killed and the contents smeared on the threshold of his mother's hut. If this lustration ceremony is omitted he is stricken with *makwa*.

(3) After the death of the head of a family the sons may take the younger widows to wife, but not until the brother of the deceased has ceremonially cohabited with the principal wife of the deceased. If this rite is not observed before a son marries one of his father's widows he will become *makwa*.

Little is yet known of the procedure which has to be adopted to remove the *makwa*, but it is said that only medicine men can remove it. An elder was recently met with who was covered with small sores, and some of his toes had come off. It was stated that he was suffering from *makwa*, due to infringement of the rule mentioned in example (1) above.

In connection with this enquiry it is of some interest to analyse the functions of the grades of elders among the A-Kamba, i.e., *Atumia ya makwa* (elders of *makwa*) and *Atumia ya ukuu* (elders of *ukuu*), and this has been done.

It must first be made clear that these titles have no connection with the ranks of *Atumia ya nzama* (elders of council) in whose hands the judicial functions are vested. The members of the highest grade of this rank are termed the *Atumia ya ithembo* (elders of the shrine), both of these ranks are part of the natural career of the head of a family of any standing in the tribe. The elders of *makwa* and *ukuu* are, however, more comparable to positions which are attained by successful medical specialists. A man may become one or the other, or he may be both. Of the two branches the elders of *ukuu* are considered the more important;

on the other hand, it is said to be more difficult to become a successful elder of *makwa*.

These branches of practice must not be confused with the profession of medicine man, which is quite distinct. A man can only become a medicine man if he is in direct communication with the *aiimu*, or ancestral spirits.

The function of a *Mtumia ma makwa* (elder of *makwa*) is to avert the evil consequences of the incidence of a *thahu* or *makwa*, the functions of a *mtumia ma ukuu* is to ward off death itself.

The former uses ceremonial and lustrates by means of various herbs, from which he concocts the *ng̃nondu* or purifying reagents.

The latter (*ukuu*) uses spells only which have a magical value, and gives directions.

The qualification which enables a man to become a *Mutumia ya makwa* (elder of *makwa*) is that one of his wives shall have died under circumstances which may leave a curse or *thahu*. He must then at once consult an elder of *makwa*, who performs certain purification ceremonies. If these are not performed the children of the deceased will become afflicted with *thahu* or *makwa*. If the ceremonies are successful the husband is after this considered to be initiated as an elder of *makwa*; if, however, he wishes to practise the art, he must set to work to obtain experience, as the ceremonial necessary to cure the many forms of *makwa* is very varied, and a wide knowledge of the various herbs employed is necessary.

In the case of a *Mtumia ma ukuu* (elder of *ukuu*) the necessary qualification is a series of deaths in the family within a short period. He can then go to another elder of *ukuu*, pay fees and be initiated in the secrets of the art—the fee is usually one or two bullocks; his duties are to remove the curse due to murders, accidental deaths, and remove the curse of death from a family which has been afflicted by an unusual number of deaths. He does not perform purification ceremonial, but lays down certain procedure which has to be followed by the applicant. He may be compared to the consulting physician who gives certain advice, such as a particular diet, and leaves the patient to follow it or not as he likes. The prescription sometimes, for instance, takes the form of a direction to have conjugal intercourse at a particular season.

To refer a moment to what may be termed the natural grades through which a native can expect to pass during his life, these really compose a system of graduated initiation which commences when a child is circumcised, when the stages of the circumcision rites are finished he becomes a fully fledged warrior, *mwanake*; a little later he becomes an *nthele*, or young married man; and when he has circumcised children he enters upon the various grades of the council: first the *kisuka*, and later on the *nzama*. The judicial powers of the community are vested in the *nzama*.

The final degree which he reaches in old age is called *Mutumia ma ithembo* (elder of the shrine), and his duty then is to offer the sacrifices at the sacred grove or *ithembo*. Among the A-Kamba the members of this grade take but little part in

the affairs of the tribe, but in Kikuyu the *Athuri ya ukuu* form a tribal court of appeal (the word *ukuu* in Kikuyu has a different significance from *ukuu* in Ukamba and merely means "great or senior").

If an elder of *ithembo* becomes so old as to fall into his dotage, and has a son who is qualified to take his place, the son is often elected in his stead.

If, however, a *Mutumia ma nzama* (elder of council) is married to a wife who is a magician, and who can instruct him in certain matters connected with the ritual of the shrine, he can approach much nearer to the sacred grove than the ordinary elder of *nzama*, but cannot actually go up to the place of sacrifice—only the elders of *ithembo* can do that.

Elders of *ithembo* are very few in number, there are rarely more than two for each grove. The above practice is what prevails among the Ulu A-Kamba. It is possible that the Kitui customs may vary somewhat.

I am greatly indebted to the Hon. K. Dundas for assistance in making these matters clear.

The Oath of the Sacred Bead (Chuma cha mchugu) in Kikuyu.

This oath or ordeal belongs to the same class as those described in the writer's work on the *A-Kamba and other Tribes* (Camb. Press), pp. 139-143, viz., the *Kithathi* and *ku-ringa thengi* ceremonies.

If one man is in debt to another and then repudiates his debt the creditor goes to the elders and demands that they may both be given the ordeal of the *chuma cha mchugu* (*chuma* is the Kikuyu word for bead).

Now the bead used for this purpose must be one of a particular kind, which has been handed down from past ages and is evidently believed to be of magical value. Several of the clans in Kikuyu are alleged to possess specimens of this bead, and each one is in charge of a particular elder, they are said to be reddish in colour and rather long in shape. Endeavours have been made to get a specimen brought in for examination, but it has not been possible to locate one, the elders state that they have not seen one used for some years. A *chuma cha mchugu* must not be kept in a house, but is hidden away in the bush—in this particular it is like the *Kithathi*.

To return however to the ceremonial connected with its use:—On the appointed day the creditor and debtor meet the elders, the latter sit in a circle and the former sit on the ground in the middle and facing each other. Each takes a piece of fine grass and places it inside the aperture in the bead and swears, as the case may be, that he lent a cow, or that he borrowed a cow, and that if he testifies falsely may, be eaten by the bead (*i.e.*, destroyed). Sometimes the bead is held in the hand, and sometimes it is placed on the ground between the two parties.

Perjury is believed to result in the death of the perjurer, and furthermore serious harm, even death, to his near relatives.

If a man who has perjured himself by this oath dies, his brothers by the same

parents will promptly pay the debt, and then call in the elders to remove the curse or *thahu* which the perjury has inflicted. To effect this lustration, the sacred bead has to be brought to the village, a sheep is killed and some of the stomach contents are smeared on the bead. Another sheep is next marched round the afflicted village, is killed, and the people eat the meat. The bones of the sheep are afterwards collected and calcined in the fire on which the meat was cooked, and next morning a libation of beer is poured over the ashes of the bones by the elders of the village. A medicine man is then summoned and he purifies (*tahikia*) the villages, and these are then finally safe from all danger from this *thahu*.

There is another piece of ritual in which beads play a part. If an elder or old woman dies in one village and later on a similar death occurs in a neighbouring village, the head of each village goes to assist at the *hukura* ceremonies or death ceremonies (described later) at the village where the death has occurred. At the conclusion of these ceremonies each will have two blue trade ring beads of the pattern known as *mtinorok* fastened on his wrist, and the senior wife of the principal elder of the village where the death occurred will have two beads tied to her wrist; they wear these for eight days, and then bathe and cast the beads into a river, finally they wash their clothes there and return home.

The custom is practised only by the people belonging to the Kikuyu circumcision guild. The blue beads used on this occasion are called *chuma cha mchugu*, but they are not the sacred beads referred to in the earlier portion of this chapter, but ordinary trade beads. Probably, as the real *chuma cha mchugu* are very rare, they pretend that these are the real articles, or think they delude the spirits into believing that the beads are the genuine thing.

Curse for Disobedience to a Judgment by the Court of Elders.

In connection with the history of the operation of the *thahu* in Kikuyu there is one point worthy of notice. That is that if a person has been one of the parties in a suit before the *kiama* or council of elders, and refuses to pay up the compensation he has been ordered, the elders can lay a curse or *thahu* on him. The procedure is as follows: they assemble at one of their recognised meeting places and then mass together, beating their long staves on the ground in unison, calling out, "We curse you on the *mithegi*; the person who disobeys the order of the *kiama* shall be cursed." *Mithegi* being the name of the staves carried by old men, and deriving the name from the wood they are made of. No elder goes to a council without his staff. The offender need not be present, but it is believed that the curse forthwith begins to take effect.

To remove the curse the offender then goes to the elders and begs to be allowed to pay the amount of the judgment. This is done, and he brings in addition a sheep; the elders then say, "Go back home, bring some beer, and the day after to-morrow we will come and spit on you." They assemble at his village on the appointed day and the offender gives another sheep, which is killed outside the gate

of the village; this is for the purpose of purifying the village, *Ku-thirura muchu*, and the meat is carried round the confines of the huts. The elders then each take a little of the sheep's fat and rub it on their staves saying, "We are glad that the man who defied our orders has now obeyed it; we cursed him through our *mithegi*, but we now smear our *mithegi* with fat, as a sign that we and our *mithegi* are glad, and there is now nothing to be feared, for we have come to cleanse you and your village from evil." The elders then assemble in a circle with the man and his family in the middle, and one of the elders anoints the tongue of each individual of the family with a spot of *ira* or white earth, and the elders then ceremonially spit on the offender and each of his family and depart.

The same belief occurs in Ukamba, and the *nzama*, or council of elders, can inflict a curse upon a man for disregard of its orders, and if he is still recalcitrant it is said to be so potent as to kill him and all the people of his village in a short time. The elders impose this curse by all clapping their hands together, and it is called *kutuu*. The effect of the curse can be averted if the man obeys and the elders forgive him; as in Kikuyu, however, he has to pay a fee of a goat, and the elders assemble and ceremonially spit on the culprit to neutralize the curse. The removal of this curse is called *ka-athimwa* or *ku-musia* by the Akamba.

The Kikuyu Ceremonies on the Occasion of a Death.

Among most people, irrespective of their stage of culture, definite ceremonials have to be observed upon the occasion of a death, and before the heirs can succeed to the property; and in Kikuyu land these are somewhat complex, and like many other observances in that country, their form greatly depends on the circumcision guild to which the person belongs. This is the excuse for introducing this subject, as it is submitted that this factor has apparently escaped the notice of previous investigators, and to understand fully the life-history of a Kikuyu native one must clearly realise how, from early years to his death, he is bound down by the ritual of the guild to which he belongs. The nearest analogy one can readily find to illustrate this is the case of one child who is baptised a Protestant and another a Roman Catholic; the main principles of these religions are the same, and among the Kikuyu the guild to which a man belongs does not affect his beliefs as to the *ngoma* or spirits and their influence upon mortals, but the ritual of his religion varies throughout his life according to the guild to which he belongs.

The ceremonial observed upon a death is called *ku-hukura*—the Swahili synonym, *sadaka*, has practically the same meaning.

The death and funeral ceremonies of an elder circumcised Kikuyu fashion, will be first described. On the day of the death the children or heirs take two rams and present them to the elders to pay for the digging of the grave; every elder who has circumcised children is buried, married women who have borne five or six children are also buried. The grass is dug with a *mubiru* or *mukurui* stick, and the sons of the deceased do the actual digging, but the elders decide the site

and supervise the work ; if a son refuses to assist in digging his father's grave it disqualifies him from receiving a share of the estate. The grave-diggers will receive a big male goat (*nthenge*), or if the family is rich, a bullock, the bullock will be slaughtered and the corpse buried in the hide. The corpse of a male is buried on its right side with its knees doubled up and with the right hand under the head ; the site of the grave is near the gate of the village, and the face of the corpse is placed looking towards its hut. A woman is always buried lying on her left side.

On the third day after the interment the elders assemble at the village to kill a ram to cleanse the village from the stain of death, and the sons eat the breast of this animal and next day shave their heads. The same day the elders bring with them one of their number who is very poor, and of the same clan as the deceased, and he has to sleep in the hut of the senior widow of the deceased and have connection with her ; he generally lives on in the village and is looked upon as a step-father to the children.

Then there is a pause of six days and on the seventh day the elders return, a supply of beer is made ready for them and a big male goat is killed, which is eaten by all present. This is called *nthenge ya noro* ; this means the "goat of the whetstone," referring to the whetstone which is used in sharpening the razors with which the heads are ceremonially shaved at the conclusion of the ceremonies. During the first four days after the death the married men in the village must have connection with their wives, after that, for another four days, they must observe strict continence.

After the *nthenge ya noro* has been killed the property is divided.

If the deceased belongs to the Masai circumcision guild the ceremonies are as follows :—

When a death occurs the elders decide whether the person is to be buried or not. Only elders above what is known as the "three goat" grade are buried ; these are what are called *athuri ya mburi tatu*, which means that they have reached the grade, the entrance fee to which is three goats, the next grade is *athuri ya mburi nne* or the "four goat" grade. No elder is a fully qualified member of council till he reaches that rank. Generally speaking it works out that only those elders who have grown-up children are buried. In the case of a person not entitled to burial, it is the duty of the elders to decide the place in the bush where the corpse shall be deposited.

Assuming that the deceased is entitled to burial the local *athuri ya ukuu* (highest grade of elders) are summoned, and the corpse is taken out of the hut by the sons and laid on the hide on which the person slept during life. A ram (*ndarume*) is then slaughtered, the fat is cooked in an earthenware pot and some is poured on the corpse, and the children of the deceased are also smeared with the fat. The ornaments of the deceased are then removed under the supervision of the elders and divided up among the immediate family, the eldest son has the first choice, then the senior wife, and each child gets something. An ox of a uniform

colour is then slaughtered, one that is all white or all black is preferred, and the hide is set aside. The elder sons dig the grave, the site having first been chosen by the elders; it is usually situated inside the village near the goat hut or bachelor quarters, *thingira*. The corpse is then interred lying on the sleeping hide used during life; if a male, it is laid on its right side, knees doubled up and right hand under the head; if a female, it is laid on its left side in the same position. The corpse is then covered with the raw ox hide with the hair side upwards and the grave is then filled in. Nothing is buried with the body, but after the grave is filled in, the elders pour some honey and some of the cooked fat on the grave, and say, "We give you this to drink."

A little later in the day a male goat, *nthenge*, is slaughtered, the meat is roasted on a fire near the gate of the village, and a little of the fat is placed on every fire in the village; the smell of this is believed to be very pleasing to the *ngoma*, or spirits, and any *thahu* or curse that may be impending is drawn away, and this act is also said to lustrate the sons who have performed the burial.

A month, or perhaps more, is allowed to elapse, and the division of the estate takes place. The children or heirs then take four rams, and the women of the village take off all their ornaments and all sleep together in the same hut, and the four sheep are also placed in the hut in question. In the morning the elders arrive and the sheep are killed, the fat is cooked and then put away to cool, while the meat is eaten by the assembled people, providing they belong to the Masai guild. The head must be cooked and eaten away from the village, the skin is taken by someone else, and the viscera by yet another person.

On the following day the heads of all the inhabitants of the village are shaved and they are anointed with the fat of the sheep. During the ceremony the people present wear their skin garments inside out, and these are anointed with the cooked latex of the *mugumo* fig tree; after their bodies have been anointed with the fat they can turn their skin robes right side outwards once more, and the women resume their ornaments.

The property of the deceased is then divided up by the elders; the principle followed is that each son takes the property which had its dwelling-place in his mother's hut, the goats and sheep, for instance, lodge so many in the hut of each wife. With regard to cattle, each son gets those which have been milked by his mother. Strict continency must be observed by all in the village until these proceedings are finished, and at their close the inhabitants and all the property of the deceased are ceremonially purified by a medicine man.

The Itwika Ceremony.

As was explained in the last portion of the previous paper on *thahu*, etc., the Kikuyu have *rika* or circumcision ages, and a long list was given; these *rika* fall into groups and so many form a greater *rika*, named either *Mwangi* or *Maina*, and these follow one another alternately. It was not clear at the time as to what

determined a group of *rika* being lumped together as *maina* or *mwangi*; it, however, now appears that this is connected with periodic ceremonies called the *itwika*, which takes place about every fifteen years or so. These correspond to a great extent to the *enoto* of the Masai and are of tremendous importance to the Kikuyu, in fact the elders state that they originated in Kikuyu, and were copied by the Masai during the period when the Kapotei and Dogilani Masai were great friends with the S. Kikuyu and the Purko Masai friends with the N. Kikuyu; in the present state of our knowledge it is, however, impossible to say whether there is any foundation for this.¹ Probably the best test would be to enquire if the Bari people who live in or near the country from which the Masai are believed to be derived, possess this kind of social organization. The *itwika* has been described by Mr. Routledge as a secret society connected with snake worship, but as far as can be discovered in S. Kikuyu there is no foundation for this idea, but elders do not care to discuss its ceremonial unless one is very well known to them, and they are not supposed to discuss it with any person of younger grade than themselves, in fact the ceremonies may be considered as a final initiation at which only fully qualified elders are allowed to attend.

The last great *itwika* ceremony was at the end of the big famine of 1898-9, and was held about the time that the Government founded Fort Hall.² The gatherings were formerly held on the area between the Thika and Chania rivers, just above the junction of these two rivers, and the name Thika is derived from its connection with the *itwika*. The last *itwika* was held near Kalaki's, in the district known as Tingnanga in Mimi wa Ruchu's country; it is said that on account of the decimation of the people by famine and small-pox it was decided not to hold it at the old place. The next *itwika* will take place when the grandchildren of people of the same *rika* as the chief Kinanjui have all been circumcised, the decision of the date rests with the *athuri ya ukuu* of the Maina generation as this is the senior generation to-day. This apparently corresponds to the *ngaje* of the Masai, *vide* Hollis's *Masai*.

An account of the last ceremony was obtained from one who was present, and it is said that the first step is to build a huge long hut to accommodate those who participate in the festival. This is divided into two main divisions, one for elders of the *maina* generation and one for those of the *mwangi* generation, and in addition, a small room for the *athuri ya ukuu* who can be considered as the officiating priests of the festival. These *athuri ya ukuu* are always eight in number, and at the last *itwika* their names were, Muthaka, Ngombwa Tutua, Kimwaki, Kathungu, Kithenji wa Njuki, Rimui wa Kanjuku, Ngegenya and Mbura wa Katuku, and the whole programme rested in their hands.

¹ *Vide* article on Masai and their traditions, by A. C. Hollis—*London Quarterly Review* July, 1907, p. 104—"Now the Masai themselves say they learnt this peculiar ceremony (*viz.* : their method of circumcision) from the Kikuyu.

² Mr. Routledge mentions a later one which took place near Karuri's about 1904, but according to the S. Kikuyu natives it was only a local ceremony.

The principal elder of each village is supposed to attend, and often the next in importance as well, so it means that the gathering contains several thousand souls, and the proceedings continue for three months or more. Each elder brings sheep and goats, bullocks, gourds of honey beer, and gourds of sugar cane beer, and relays of food are brought to the camp during the ceremonies by women, but no women are allowed within the confines of the camp. A number of men are also told off to collect firewood but do not come inside the camp. The only persons allowed inside the camp, except the elders, are eight spearmen, who are told off to attend on the eight *athuri ya ukuu*.

It does not appear to be possible to obtain a detailed account of the proceedings, but it is said that every day the eight *athuri ya ukuu* instruct their juniors in the customs of the tribe and so forth, the elders also hold "*ngomas*" or dances.

One man is chosen as an official trumpeter to the proceedings, and he collects the elders for the various rites by blowing a horn of the rare bongo antelope (*udongoro*). This horn is called *choro*, and no one else is allowed to blow it; this is considered a very honourable office, and he is paid nine rams and nine female kids for his services.

In former days the elders in charge of an *itwika* used, towards the end of the festival, to send two envoys to a certain place on a stream called Kikira, in Kenya province, which is said was the habitat of a mysterious reptile called the *ndamathia*. It was described as not being a snake but more like a crocodile. It is explained that they gave this beast beer to drink, and when it was drunk plucked some hairs from its tail. A hairy tail is not characteristic of reptiles, but all are agreed that the hairs were obtained. The envoys then returned, and the hair was plaited together with some strands of the fibre of the wild date palm (*Phoenix reclinata*), and then placed on the top of the *itwika* hut. At the conclusion of the festival the people went in procession to a sacred fig tree (*mugumo*) in the vicinity, and stuffed the hair into a crevice in the tree and left it there. They then took the milk of a ewe which had only borne one calf, the milk of a ewe which had only borne one lamb, and the milk of a goat which had only borne one kid, and poured them as a libation at the foot of the fig tree, a dance round the fig tree then ensued. This was the concluding ceremony of the *itwika*, for after that each person attending was adorned on the wrist with a *mkwaru* or strip of skin from a male goat, and they broke up the *itwika* house and returned home.

At the last *itwika* held in south Kikuyu the elders did not send for the hair of the *ndamathia*, but the concluding ceremony was carried out with a big black ox, which was tied by its fore and hind legs and laid between two poles; all the people then came along one after the other and stamped on the ox, which eventually died, the ox was not eaten but left lying there, they then poured libations of milk and fat at the foot of the sacred *mugumo* tree and danced round it, praying to God (*Engai*). After this they shaved their heads, were adorned with the *mkwaru* from a male goat and returned home. Upon reaching their villages each elder killed a

ram and placed a *mkwaru* cut from its skin on every person in his village; these were worn for only one day, the villagers then ceremonially bathed, and threw them away.

It is said that these ceremonies are very pleasing to God (*Engai*). No one is ever allowed to cultivate on the area which has been used for an *itwika* ceremony, and no one must ever cut the *mugumo* (fig tree) with an axe or knife.

There is a curious custom among the Kamba of Ulu in the event of a member of the family being away when a death occurs in a village. An elder measures the corpse, cuts a stick of the same length and places it alongside the house of the deceased; this procedure is believed to protect the absent one from evil. Upon his return a goat is killed and he is smeared with the contents of the stomach *muyo* in Ki-Kamba, the *tatha* of Kikuyu, and some is deposited at the door of the hut, and he must tread in it before he enters the hut; this ceremonially purifies him. The stick is then taken up by a *mutumia ya makwa*, one of the elders who understands the ritual connected with the removal of *thabu* or *makwa*, and it is thrown out into the bush where the corpse of the deceased was deposited.

There is another curious custom in Ukamba which throws some light on their spiritual beliefs:—If a young unmarried man is killed away from his village, his *muimu* or spirit will return there and speak to the people through the medium of an old woman in a dance (see p. 86, author's work on the A-Kamba), and say, "I am so and so speaking, and I want a wife." The youth's father will then make arrangements to buy a girl from another village and bring her to his, and she will be mentioned as the wife of the deceased, speaking of him by name. She will presently be married to a brother of the deceased, but she must continue to live in the village where the deceased had his home.

If at any time the corporeal husband beats or ill-treats her, and she in consequence runs away to her father, the *muimu* of the deceased will come and pester the people of the village and they will have bad luck; it will probably ask, through the usual medium, why his wife has been ill-treated and driven away. The head of the family will then take steps to induce the girl to return for fear of the wrath of the spirit of his deceased son.

Laws of Compensation for Murder in Kikuyu and Ukamba.

It is a matter of great importance, from an administrative point of view, that these should be properly understood, as otherwise a murder is likely to create a hereditary feud between the two families, which will eventually lead to fresh crimes.

Kikuyu.—In Kikuyu, for instance, until the ceremonial has all been properly carried out, no member of the family of the murdered man can eat food out of the same dish or drink beer with any member of the family of the murderer, and in Ukamba it is believed that unless the matter is properly adjusted according to the law

(their law) the members of the family of the murderer will continually be involved in quarrels which are likely to end by one of them killing his neighbour, and conversely the members of the family of the murdered man would become involved in quarrels and be liable to be killed as their relation had been. If one tries to look at the matter from their point of view it appears to be this:—there is a bad spirit or *muimu* about, belonging to an ancestor, it enters into a man and the result of this is that the next time he quarrels with a neighbour he kills him. This spirit may continue to possess that person, or it may go on to another member of that family and then the same result occurs. In the same way the *muimu* of the deceased, the murdered man, influences the *Aiimu* in the bodies of all the members of his family and makes them afraid. They know that this death-dealing spirit is abroad, and the members of the family are more liable to be killed if they become entangled in a broil. Thus both families are anxious that this state of affairs shall cease and that the troublesome spirit should be appeased and laid to rest.

The explanation just given may or may not be the final interpretation, but the fact remains that it is considered a vital necessity that the ceremonies necessary to close the trouble caused in a tribe by a murder should be carried out according to the law of the tribe, and only by the observance of the proper ritual can the avenging spirit be appeased.

In south Kikuyu there are only two persons qualified to perform these ceremonies and they are Gachii wa Kihara and Joguna wa Kihara, both sons of a great elder and chief named Kihara, of the Anjiru clan, upon whom those duties devolved, and the office is apparently hereditary.

The ceremonies are called *Kugira uhio wa kuria mundu*, which means "To carry the man who was killed," and the word *mugiro* derived from *ku-gira*, is also used in this connection. Of course, the payment of compensation has now been abrogated by Government, and the death penalty imposed in its place according to our law, so the functions of the elders mentioned have of late years been confined to the supervision of the ceremonies which have magical or religious significance. The description of the affair, which was obtained from Gachii himself, however, takes no cognizance of the amendment caused by the substitution of the "lex talionis" for the old principle of "wergild" or compensation. The procedure runs as follows:—Soon after the murder has occurred the father of the murderer summoned Gachii or Joguna to his village, and whichever of these elders attended took with him eight *athuri ya ukuu* (they are the elders of appeal), and the first object of their mission was to stop any fighting between the young men of the two parties.

They remained at the village, and the father of the murderer then collected seventy goats and sent them to the father of the murdered man, and a bullock and a male sheep to the mother of the deceased; this bullock is important, it is called *ndegwa muhiriga* or *njiga migwe*, that is the "ox for the clan" or the "ox of the arrows," this represents a peace offering to the clan, and is to prevent the clan of the deceased taking out their arrows to avenge their brother. Two days

later thirty goats were collected and sent to the father of the deceased. The compensation of a hundred sheep or goats can be paid either in goats or sheep or cattle, but whatever is paid the count is always kept in sheep or goats. For instance, a *thenge*, or big male goat may count as two or three goats, according to size, in the same way an ox has its stated rate of exchange and will be counted as so many goats; in pre-European days the ox counted as three goats, and a heifer or cow counted as ten in paying compensation or in marriage fees for a wife.

The next payment is nine male sheep to the *athuri ya ukuu*, and nine more sheep are given to the father of the deceased, and nine ewes, *nyarume*, to the maternal uncle of the deceased or *mamaue* as he is called. The father of the murderer and the father of the deceased then each bring a male sheep, and the trunk of a banana plant is procured, placed on the ground, and the murderer and his relations seat themselves on one side of it, and the relatives of the other party on the opposite side; four of the *athuri ya ukuu* also sit on each side. The two sheep are then killed, and the two parties exchange pieces of cooked meat and eat them, they then exchange pieces of sugar cane and sweet potatoes smeared with *tatha* (the contents of the stomach of the sheep), these are given to the women and children of the two families. Some gruel is also exchanged, this is for the children of the two families, and is eaten inside the villages of the two parties.

The presiding elder Gachii or Juguna does not sit with either party, but a little way off, his function being to see that the proper ritual is observed.

The elders then take the spear or sword with which the murder was committed, and beat it until it is quite blunt, the spear head or sword is then taken away and thrown into a deep pool in the nearest river, they say that if they omitted to do this the weapon would continue to be the cause of murder.

The final act is what is called *ku-kukuriwa ithe na nyina* (to purify father and mother). The elders adorn themselves with necklets of a grass called *ngoka*, and they wear these for eight days, but if at the expiration of this period no moon is visible they cannot take them off till the moon reappears. When the day comes for dispensing with them they cross a river and bury them on the far side, and return home without looking back. In north Kikuyu, Mwaitume, it is said that they throw the rings away in an old *shamba*, garden, dig up a sweet potato, eat it, and then return home.

These ceremonies are the same for both grades of the Kikuyu, viz.: those circumcised Kikuyu fashion, and those circumcised Masai fashion. If they are properly carried out they wipe out all questions of blood feud, and the members of both families can eat together.

If the *mugiro* ceremonies are not properly carried out the spirit of the murdered man will go back to his village, cry out in the night like a child, and will enter into one of the villagers who will become as one possessed. The people will call out to him, "Who are you?" and he will reply, "I am so and so" (mentioning the deceased). "I have come because I have been abandoned." A near blood relative of the deceased must then take a male goat or sheep, if the deceased was

a man, or a young ewe, *mwati*, if the victim was a woman, this animal is taken away into the bush, and it is killed by strangling, and immediately it is dead its throat is pierced and the blood allowed to run out on the ground. They then carve a piece of meat from each limb and part of the animal, and place them in a heap, the bones are also placed in another heap, and they are left there. Any meat that remains is eaten by the elders, the person who was possessed of the *ngoma* or spirit of the deceased then recovers.

There are some variations in the customs for different cases, the compensation for the murder of a woman is only thirty sheep or goats and three rams.

If a man murders his cousin on his mother's side of the family, the father of the murderer collects fifty sheep or goats, and pays them to the head of the family of the deceased, and the recipients usually kill an ox which is eaten by both parties; the elaborate ritual described above is not observed because of the blood relationship which exists.

If a man kills his brother or sister by the same mother there is no compensation—the case very rarely arises, the father would, however, kill a sheep and make his children eat it together.

If a pregnant woman is struck and injured by a man, and miscarries in consequence, the elders are called in to settle the matter, the culprit has to bring two male sheep, first one is killed and eaten by the villagers and the elders, but not by the woman, the second is eaten by the woman and visitors, but not by the elders.

Some of the fat and meat of this second animal is cooked in a pot with some bitter herbs, and the woman drinks the decoction, this is evidently of the nature of a purification, it is called *theria nula*, to purify the belly. The people present who are nearly related, either to the offender or the woman, are then invested with *rukwaru* or wristlets, made of the skin of the sheep first mentioned.

This is not a matter for the *athuri ya ukuu*, but the ordinary councillors *athuri ya Kiama*.

Ukamba.—In Ukamba there is a general similarity of ideas, but a considerable difference in ceremonial.

The general compensation for the murder of a man is thirteen cows, two bulls, and fifty goats; and for a woman six cows, two bulls, and one goat.

In each case the actual blood money is twelve cows and five cows respectively, the balance being for the ceremonies necessary to wipe out the blood stains, and which bear the name of *Etumo*.

The cow, the two bulls, and the goat are taken to the village of the murdered man; the elders, *athuri ya ukuu*, assemble there, and the goat is first killed about 5 p.m., the murderer must not be present, if he or any member of his clan appeared at the *Etumo* ceremonies they would probably be killed. Fourteen pieces of meat are cut from its throat, an elder impales seven pieces on a wooden skewer, and puts them into the mouth of the wife of the deceased, who eats them, and the other seven are similarly given to the brother of the deceased. When darkness

comes on the elders retire to a short distance from the village, and the widow and her brother-in-law retire to a hut and have connection, they then return and call the elders.

Upon their return the bull is killed and they receive half of its meat and half of that of the goat, the remainder being consumed by the family of the deceased. The meat must all be eaten up during the night, and none of the bones must be broken, and before morning breaks the latter must be carried out and deposited in the bush by the elders. The hides of the two animals must not be allowed to remain in the village, but are carried off by any elders who do not belong to the same *mbai* or clan as the deceased. The cow remains in the village, and becomes the personal property of the widow, and she is not allowed to sell it.

The collection of the number of cattle payable as blood money generally takes some time, and the members of a man's clan often assist him to pay. When they are all collected there is an assembly of people with the elders at the village of the deceased, members of the family and clan as well as strangers, and a bull is slaughtered from the compensation cattle; there is a general feast, and each person takes a strip of the hide away with him for use in tying up loads. The cattle are then divided, the senior member of the deceased's family receives one cow and pays back one bull, the maternal grandfather of the deceased receives a cow and pays back a bullock, and if there is a half-brother of the deceased he receives a cow and pays back a bull, provided that he does not live in the village of the deceased. If there is a village of the same clan near by, the head of it receives a cow and pays back a bull. None of these cows may be sold or given in exchange for a wife; if this rule is broken the recipient has to pay back a cow to the family. The bulls given in exchange provide feasts for the elders, members of the family of the deceased, and members of the clan. The remainder of the cattle are the property of the eldest brother of the deceased, he divides these between the mother and wife or wives of deceased, and they have the use of the milk, he cannot dispose of one of the beasts without the permission of these women.

The payment of the cow, bull, and goat first mentioned is of ritual importance, and is called *Etumo*; they are necessary to protect both the family of the murderer and the murdered one from the powers of the unappeased death-dealing spirit which is abroad. Even if the killing was accidental (*Mbanga*) the *Etumo* payments and ritual must be observed, because it shows that there is some bad influence about or the accident would never have occurred.

In former times, if a man of one clan killed another in some intertribal fight, the custom was for a brother to waylay and kill a man of the clan who had killed his brother, these two deaths cancelled each other, and there was no more question of compensation, but it was considered essential that the *Etumo* fees should be paid and the proper ceremonial observed.

There is one other point, and that is with regard to the weapon which was the instrument used in the murder, in Kikuyu the spear is thrown away, but in Ukamba the weapon is nearly always an arrow, and this is carried away some

distance and placed on a path, the idea 'apparently is that it contains a harmful essence which it is impossible to remove, and it is believed that the evil will be passed on to whoever picks it up. If this is not done it is said that the evil will remain with the family of the deceased.

The Kirume or Dying Curse.

The doctrine of the *kirume* occurs in both Kikuyu and Ukamba, in the latter district it is termed *kiume*.

The belief is also said to be found among the Ja-Luo Kavirondo where it is called *ukuongo*.

It is really a *thahu*, *thabu* or *makwa*, which can be suspended over his descendants by a dying man. The same idea exists among the Swahili, who call it *rathi*, or the dying blessing. If a man does not receive his father's blessing he is believed to go through life attended by much misfortune.

If the head of the family feels that he is nearing his end he will assemble his sons, and to the eldest he will probably say, "The goats belonging to such a hut shall be yours"; he will then call another son and say, "The goats of such and such a hut shall be yours, and if any of you break these wishes he shall surely die." He will then mention a certain *shamba* (cultivated field) and say, "Such and such a *shamba* shall not be sold, and if this wish is broken the one who sells it shall die." This operates as an entail on the property, and, upon enquiry, examples may be found all over the country, and it will be passed on from generation to generation; such is the strength of the belief.

Another case quoted was that of a man who had a ne'er-do-well son who was in the habit of pilfering the neighbouring villages, the custom is for those who have suffered to collect and seize the equivalent of their losses from his father. If this continues the father will in the end become so annoyed with his son's misdeeds that he will put a *kirume* on him when on his death bed—there is quite a mediæval flavour about this action.

Sometimes, too, a man when he is very old will entrust a son with charge of his live stock, and the son may abuse the trust and let the flocks and herds melt away. Cases have been known where the old patriarch when dying has put a *kirume* on his son to the effect that he shall neither grow rich nor have wives, but to the end of his life shall be condemned to perpetual poverty.

Again a daughter may be a trouble to her father, she is, say, married to a husband who has paid over the required dowry to her father, she runs away, repeatedly misbehaves herself, and so forth, and the father will then be subject to continual worry, owing to the husband's demands for the return of the dowry. The father may eventually become so weary of all this worry that he will put a *kirume* on her and condemn her to perpetual barrenness.

Another case quoted was that of two brothers, one rich and one poor, the poor man may be envious of his brother and hate him in consequence, one day they go to drink beer, and excited by the liquor the poorer one brutally attacks his brother

and grievously injures him, when the injured man recovers consciousness he will call his brother and say, "You have always been jealous of my wealth, and now I shall probably die from treatment received at your hands, but when I am dead if you attempt to seize any of my property you shall only be able to look at it, for if you touch a single head of stock you will die, and if your son comes to take any of my beasts he will also die."

If a dying man calls out to a man of his own clan *muhirika*, and makes a request such as, "Give me water," and the person refuses, the dying man can impose a *kirume* upon the one who refuses.

A man is, generally speaking, only able to lay a *kirume* upon a person belonging to his own *muhirika* or clan, which really means that a *kirume* will only affect one with a common blood tie.

There are, however, two exceptions to this :—

If a man of one clan marries a woman of another clan (as is the rule) he can, if necessity arises, place a *kirume* upon the family of his wife if they live in the village of his father-in-law, because they have, as the expression runs, "Eaten of his property," referring to the live stock he has paid over to his father-in-law for his wife.

The converse can also happen, for if a man has married a woman and has not paid up to his father-in-law the full amount agreed upon, the father-in-law when he dies can impose a *kirume* upon his son-in-law, and such *kirume* may also extend to his daughter, the idea probably being that the daughter has not sufficiently worried her husband to pay the balance due.

The power to impose a *kirume* is apparently not altogether confined to elders, for it is said that if an incorrigible child is driven away from home, becomes starved and dies in consequence, it can before it dies curse its parents and say, "You have treated me like this, and therefore you shall not have any more children."

It is said that if a person hears that someone of his own clan is threatening to impose a *kirume* on him, he can take steps to prevent its infliction, the procedure was described as follows : If a person hears that, say, a brother intended to place a *kirume* on him, he would at once take a male goat or sheep to his village and kill it there, he would offer some of the fat, some milk and some beer to the dying man, who could not refuse to forgive the suppliant, and would ceremonially spit into his hands and rub a little saliva on his forehead, navel, and feet. The threatened person would then depart in peace free from any danger of a *kirume* from that person. This applies to both guilds.

One curious case of *kirume* was described which is worth notice, it is probably very rare, but it possibly carries evidence of the ancient origin of the belief and dates back to matriarchal times.

Suppose a dying *mwanake*, or member of the warrior age, lays a *kirume* upon his maternal grandfather, what course would he pursue to rid himself of the dangerous infliction ? If he was unable to get the one who imposed it to spit on him as above described, he would have to seek a grandson by another daughter, take or send to him a male goat, some beer, the milk of a cow and seed of the

various kinds of grain grown in the country, and beg him to come to his village. The grandson would then come accompanied by the elders, he would taste the meat, beer, milk, etc., and ceremonially spit them out on the grandfather, and this would relieve the old man from all danger from the *kirume* imposed by his other grandson. There is a word *kigao*, which is intimately connected with *kirume*, and is often confused with it, but enquiry seems to show that *kigao* means the neglect of a dying father's wish with regard to the disposal of property, and the result of *kigao* is, therefore, *kirume*, but cause and effect are often very closely allied in the mind of a native.

The fear of *kirume* seems to be much greater in that section of the tribe circumcised Kikuyu fashion, for a prominent elder of the Masai guild stated that when those circumcised Masai fashion succeed to their father's property they are invested with the brass bracelet worn by elders on their right wrist, and upon their mother's death they wear the iron bracelet worn by her, these are called *kigao*, and once an elder has been invested with these he is quite safe from the effect of any *kirume* from his parents. The younger sons receive pieces of the ear ornaments, *ichui*, which are made into finger rings and fulfil the same purposes as the bracelets. This probably accounts for the greater popularity of the Masai guild among the Kikuyu people. At the same time the elder admitted that it would be bad to squander the flocks and herds left by his father, and that if they became depleted he would probably sell a portion of the landed property to make the flocks and herds up to their original strength.

If a man hears that a near relative is very ill he makes a point of going to see him, and takes the precaution of getting him to ceremonially spit on his hand and rub his visitor on the navel.

If a man goes to see his sick father or mother he takes a piece of mutton fat, and the sick parent ceremonially spits on it and the visitor rubs the saliva covered piece of fat on his navel.

A married woman can impose a *kirume*, but not on an unmarried woman, the following is an example of a case in which a married woman may invoke this curse :—

If a married woman has for a long time been systematically ill-treated by a brutal husband she can when dying put a *kirume* on her father for having forced her to marry such a bad man, and also upon her husband for his brutality.

The *kirume* is looked upon as the severest form of *thahu* or *nzahu* known, in most cases of *thahu* the subject rarely dies, because it is slow in its action and the patient has an opportunity of making reparation and seeking relief from the prescribed medicine man or elders, but in the case of a *kirume* the curse is very swift in its action, the patient will rapidly sicken, break out into ulcers and die often before he can make arrangements to take measures to arrest its onslaught, his live stock will also mysteriously die.

It is believed that the effective power of the *kirume* is derived from the spirit (*ngoma*) of the deceased person by whom it is imposed, assisted by the *ngoma* of the ancestors of the family.

It is said that there is no poison without its antidote, and the same applies to the *kirume*, but the antidote must be applied in good time and the only persons who can effect a cure are certain persons called *athuri ya ukuu*. The *athuri ya ukuu* compose a grade of elders above that of *athuri ya mburi nne* (elders of four goats—referring to the fee they pay for initiation to the grade). They are always old men and rich, and have to pay to their fellow elders of the grade a bullock and a male sheep or goat as initiation fees.

While the *athuri ya mburi nne* form the ordinary *kiama* or council of elders, the *athuri ya ukuu* constitute a native court of appeal, but they do not admit appeals except in very important cases, when it is within their competence to revise a judgment and if they consider fit reduce the amount of compensation. It is also the duty of the *athuri ya ukuu* to instruct the heir in the customs of the tribe when he succeeds to the property after his father's death.

The *athuri ya ukuu* do not treat ordinary cases of *thaku* but have to be called in in cases of *kirume*.

The ceremonial connected with the removal of a *kirume* is as follows, it is called *ku-takikia kirume* in Kikuyu, which means "to purify from the *kirume*."

The *athuri ya ukuu* are summoned to the patient's village, and the day before the ceremony the elders catch a mole-like rodent called *huku* (*Tachyoryctes* sp.), put it alive in a cooking pot with some sweet potatoes and cork up the mouth of the pot. The *huku* must be caught near by the patient's village. Next morning the *athuri ya ukuu* arrive with a medicine man belonging to another clan and a male sheep will be killed, the elders then take the *huku* out of the pot and make passes all over the patient's body with the live animal and they then take the *huku* and samples of various kinds of native food, beads, etc., and proceed to the place where the corpse of the person who imposed the *kirume* has been buried or thrown out. Another sheep is taken with this party and also a small cooking pot, upon reaching the spot referred to the second sheep is killed and some of its fat is cooked in the pot. They then dig a hole and pour the fat in it, also milk, honey, beer, etc., they smear the *huku* with the *tatha* or stomach contents of the sheep, and the medicine man ties a tiny piece of meat to the right and left foreleg of the animal with a string made of *mugeri* (hibiscus) fibre, and then fastens it up in a rough net made of the roots of the *ruriera* plant, and they cut the face off the sacrificial sheep with the eyes intact and place them all in the hole saying, "Go back to your burrow and take with you the spirit of the person who left this curse." They then fill in the hole. The medicine man eats the remainder of the meat. The medicine man afterwards returns to the village and purifies it.

They state the *huku* personifies the person who imposed the *kirume*, and the eyes of the sheep are to watch to *huku* and see that it does not return to the village. The *huku* is chosen because it lives below ground, and the *ngoma* of deceased persons are believed to live below ground.

After this ceremony it is said that the affected one will recover, some say, however, that it will only alleviate the effect of a *kirume* but not remove it

completely. The elders, however, stated that this would not affect a *kirume* placed on a piece of land forbidding its sale, and what may be called the *kirume* of entail could not be lifted.

The lustration from a *kirume* by the *huku* ceremony only applies to the Kikuyu guild.

Altogether this is a very pretty example of what Prof. Frazer terms "homœopathic magic."

If a young woman has been abused or vilified by the young men (*anake*) of her particular *rika* or generation, it is a serious matter for her, but nothing is done about the matter until the girl is about to be married. The father, however, then takes a ram and makes a feast for the *anake* of the same *rika* or circumcision generation as his daughter, and they assemble and ceremonially spit on the girl. She can then be safely married and bear children. In fact, as a precaution, this is generally done even if there is no record of a quarrel between the girl and the young men of her *rika*. A medicine man is then called in, a ewe is slaughtered, and he ceremonially purifies the girl before her marriage.

Ukamba.—As was mentioned before, the doctrine of *kirume* or the dying curse is found among the Kamba people and is there called *Kiume*.

Elders, *atumia*, and young married men, *anthele*, can impose a *Kiume* among the A-Kamba but not the warrior class, *anake*.

A man is able to place a *kiume* upon the people of a village to the effect that they shall not refuse food or good treatment to a particular person, the friend of the dying man, and this friend may even belong to another tribe.

A person cannot impose a *kiume* on anyone outside his immediate family. A married woman can place a *kiume* on her father's village if she has reason to do so.

An eldest son can place a *kiume* on a particular thing in the village from which his mother came, a common case of this is when a man places a *kiume* on the people of his maternal grandfather's village, contingent on the disposal of a beast which was paid by his father to his mother's people as part of her marriage price. The reason of this is that an eldest son has a claim to a heifer, the progeny of the marriage price paid by his father to his maternal grandfather for his mother, and he can, when dying, will this beast to any particular person, and if anyone prevents this bequest being carried out he will die; the *kiume* generally falls on the head of the village. The formula used is:—"If you do not carry out this wish you will not be able to eat meat, to drink water, to drink milk, to eat maize, to eat millet, and so on—and you will surely die."

As in Kikuyu, a dying elder in Ukamba can place a *kiume* on a cultivated field, forbidding its sale out of the family.

If a Mu-Kamba breaks a dying wish and incurs a *kiume* he can generally be freed from the consequences if he goes to an elder of his father's village or to a near relative of his father and takes a bullock, the beast is killed and the elders spit water and milk on to his face—this saves him from the worse effects of the *kiume*, viz., death, the ceremony is called *kuathimwa*.

There is little doubt that much more remains to be learnt about the ritual of *kiume* in Ukamba, but these things are more difficult to work out in that district and the details have to be dragged out bit by bit.

As a general summary of the belief in the *ngoma* or ancestral spirits in Kikuyu it may be mentioned that there appears to be very little difference between Central Africa and Europe in this matter, for they seem to be merely the souls of the departed which received such marked attention in Europe even up to present times, as for example the Feast of All Souls and St. John's Eve. The Kikuyu will tell you that there is only one *ngoma* or spirit for each person, and that women as well as men possess *ngoma*.

Cattle are said to have no *ngoma* or soul, but sometimes become possessed with the *ngoma* of human beings. An evil disposed *ngoma*, it is said, will sometimes enter cattle to kill them, and the people know when a beast is so possessed by the animal shaking its head and by tears streaming from its eyes. The *ngoma* can however, be driven out by lighting the dry fruit of the *Kigelia* Musa tree, and making the beast sniff the smoke. They also believe that the Almighty (*Engai*) can control the actions of the *ngoma*, and they occasionally go to a sacred fig tree, *mugumo*, and beseech *Engai* to prevent evil disposed spirits from bringing evil on the people.

It is said that the *ngoma* of a murdered man flies straight back to his father's village and, as a rule, remains there, but if a murderer runs off and hides, the *ngoma* of the murdered man will often pursue him and haunt him, or influence events which will result in him being discovered and handed over to justice.

It is of the utmost importance for students of the sociology of these people to try and realize the reality and closeness of the influence of the ancestral spirits upon the daily life of the native, and unless an ethnologist has been in daily contact with the people, and striven to understand their point of view, it is difficult for the weight of this to be felt to a full extent. It is not proposed to assert that there is any scientific foundation for their beliefs in the activity of ancestral spirits, but some of the leaders in the psychical research field allege that it is scientifically proved that human personality does survive and does communicate under favourable circumstances, and if this is so, it might turn out that the races of the lower planes of culture are more sensitive to such influences, and that after all there is some truth in these beliefs.

It is therefore submitted that the safest attitude to adopt is that the evidence is at present insufficient, but that it is important to continue to study carefully the question.

It will be observed that the Kikuyu believe that their ancestral spirits live underground, but the Kamba believe that they inhabit certain sacred fig trees, and it is worthy of note how widespread the latter belief is.

It is prevalent all over India, and examples are to be found all along the east coast of Africa; there is one common feature to the whole area and that is the belief that sacrilegious trespassers in a sacred grove are assailed by showers

of missiles, cases of this are often alleged to occur in India, and the writer has heard of two examples in East Africa, where colonists who had no knowledge of these beliefs, and had built their houses in the vicinity of sacred fig trees, asserted that they were periodically disturbed at night by stones thrown on their roofs. In Phil Robinson's well-known book, *In my Indian Garden*, page 208, it is stated that in Burmah to this day Government pays to the headman of certain forest tracts a fee called *murung* for appeasing the *manes* of their ancestors lodged in old *sal* trees.

EVIL EYE.

The belief so widespread in Europe, Morocco and many other parts of the world has never received much attention from observers in this part of Africa, and it was only recently realized that it received much recognition in Kikuyu. It is called *kita* or *kithamengo*.

The word *kita* means saliva as well as evil eye. The Swahili synonym is *kijicho*.

A few people here and there throughout the country are believed to possess this gift, women as well as men possess it, and it is irrespective of the guild to which a Kikuyu belongs; the possessor is born with it.

It will gradually dawn upon the people that so and so possesses the power, owing to the fact that if that person audibly admires a beast belonging to a neighbour the animal shortly after that becomes sick. If this occurs several times the various owners compare notes and it becomes generally known that so and so is *kithamengo*.

It would therefore seem that the idea is not based on an evil glance but upon an envious thought.

After that, if a cattle owner hears that a man who has this power (or one ought, perhaps, to term it "this infliction") has been admiring one of his cows, he will send for him and insist on him removing the evil; this is done by the man wetting his finger with saliva, and touching the beast on the mouth, and on various parts of the body with his wetted finger; this is believed to neutralize the enchantment.

Members of the Chera and Anjiru clans are notably possessed of this power with considerable frequency, the Ambui and Aithiageni again very rarely possess it. Even a medicine man cannot remove a curse imposed by a person possessing the evil eye; only the individual who imposed it can remove it, and he can do it only in the morning before he touches food.

Human beings and also inanimate objects are equally affected by the power, for it is said that if a person who possesses the evil eye admires a woman who is enceinte she will abort, and if she is not her breasts will become highly inflamed,

and he has to come and ceremonially rub a little saliva on them to remove the danger.

If an individual object is admired, say a spear, it will soon afterwards be broken, or if say the leather covered sheath of a sword is admired it will probably be gnawed by rats and spoilt.

No one who is not born with the power can acquire it, and it appears to be looked upon as an unavoidable misfortune, for they say it is the gift of God (Engai), and if a death or loss occurs the person to whom it is attributable cannot be sued for compensation before the "Kiama" or council of elders.

In time the people get to know who possesses the power, and if such a person enters a village he is asked in a friendly way to spit ceremonially on all the children to prevent anything untoward occurring to them owing to his visit. If a father possesses this power he can render his children proof against its action either from himself or any other person by shutting his eyes and then ceremonially spitting into each of their mouths.

The power is said to be hereditary, but all the children are not born with the gift. This belief exists among the Masai, and it is called '*Ng-onyek oo'-l-tunganak*', and will probably be found to account for the ceremonial spitting which was so common among them when they wished to show their friendliness. Refer to Hollis's *Masai*, page 315, the spitting on children is undoubtedly done to show the parents that the stranger is anxious to do the right thing and not afflict the child by the power of the evil eye. Also vide Hollis's *Nandi*, page 90, spitting is again believed to remove the spell of the evil eye (*sakutik*).

In Ukanba Mr. Dundas states that it is called *kyeni*, there is said to be a whole clan in Kitui called Mwanzi which possess the power, and it often happens that when a person has received a slight injury he will go to a member of this clan and ask him to spit on the injured spot, and forthwith becomes whole, possibly he attributes his hurt to someone with the power of the "evil eye." It is also said that possessors of this gift have such power that if they admire a stone it will split into fragments.

The Magic of the Eithaga.

It has occasionally been incorrectly alleged that the power of the "evil eye" in Kikuyu is the monopoly of one clan called the Eithaga or Aithaga, but such does not appear to be the case. The members of the Eithaga clan are credited with supernatural powers, but they are of quite a different character, as will be seen below. The name of the clan is *Eithaga* or *Kiuru*, a single member is called Mweithaga. The name Kiuru is an opprobrious nickname, which means "those who bewitch people."

The stronghold of the Eithaga is Karuri's country on the east slopes of the Nandarua Mountain, but it is said that they originally came from Karira's to the north of the Saba Saba River. The present head of the clan is one Kiriri near

Karuri's, and in South Kikuyu the most prominent Mweithaga is Mkone wa Ndawa, it is said that the chief Kiriri has hair growing on the point of his tongue. The clan is nearly entirely endogamous, that is to say, a Mweithaga generally marries a Mweithaga, no man of another clan will marry a Mweithaga woman but a Mweithaga man may occasionally find a mate from another clan. The members of the Eithaga clan practically all belong to the Kikuyu circumcision guild. They are, however, divided into two divisions, *A-Mbura* and *A-Kiuru*, the first meaning the "rain-makers" and the second the "wizards."

The former profess to be able to make rain, but their powers in this connection are not considered very extensive, and the majority will only admit that if rain is about a *Mu-Mbura* may cause it to fall but not if it is not the proper season for rain. If rain comes on in a camp where one has any Eithaga porters they will turn out, wave branches and blow vigorously in the direction from which the rain is coming, and what is more, firmly believe that they are having some effect on the elements.

In connection with these rain-making powers, it is curious to note that no Mweithaga may drink or cook with rain-water that has been collected in a cooking pot, if he does he will surely die. Further, no Mweithaga may carry embers of fire in a fragment of crock from a cooking pot, he must either carry the fire in some green leaves in his hand or get a fire-brand.

We now come to the wizard branch of the clan. Only the males have magical powers. It is said that a Mweithaga will take an ox or Kudu horn and blow it and by doing this will bewitch an enemy saying, "I blow this horn and your heart will become like the wind I blow through this horn," meaning, it will disappear and be lost. The person will then be bewitched, will cough up phlegm, and eventually die unless he takes offerings to the Mweithaga and beseeches him to remove the spell, the proper thing is to take a ram and some sugar cane, if this is done the wizard is unable to refuse and will keep the sheep, cook some of the fat and put it in his mouth with some of the juice from the sugar cane. He will then squirt some into the mouth of the bewitched person, and will also put some into a gourd for the patient to take back to his village and give to his children. After this ceremony the patient recovers, and what is better, it is said that no Mweithaga can again bewitch him in this way.

A Mweithaga, if he wishes to bewitch a village, will go into the bush and find some francolin eggs, and will put these, together with the leaves of the *mkurwe* (*Albizzia*) bush, on a fire and will say, "As these eggs burst and as these leaves shrivel up so shall this village be destroyed," and it is believed that evil will forthwith fall on the people of that village, but only upon the people, for the Eithaga do not harm livestock. Some will put the francolin eggs with water in a cooking pot on a fire and then break the pot and the eggs with one of the hearth stones. The Eithaga never use herbs or material substances in their magic, all spells are done by invocation. No medicine man can remove a spell imposed by a Mweithaga, it can only be removed by the one who imposed it or by another Mweithaga. If, however, a mysterious sickness falls on a village a *mundu mugo*

or medicine man is called in, and he can diagnose it and tell whether it is due to the magic of the Eithaga. A Mweithaga cannot bewitch another Mweithaga, nor can he bewitch a person belonging to another tribe such as Masai or Kamba.

Sometimes, however, they are of use, for they are believed to have the power of bewitching unknown thieves, and so it occasionally happens that a person who has had, say, some goats or some sugar cane stolen, will call in a Mweithaga and ask him to throw a spell on the thief. He will come to the village and take a piece of mud containing the spoor of one of the stolen animals or one of the stems from which the sugar cane has been cut as the case may be, and he will say "*A rokwa uquo*," "I bewitch the thief," the thief who is probably not far away will hear people talking of this, and being convinced of the effects of the magic will hasten to return the stolen property to its owner.

The Mweithaga is then called again, and the owner of the goats takes one and kills it, the Mweithaga cuts out the stomach with part of the œsophagus, he wets his finger with saliva and touches the end of the œsophagus with his wetted finger, and he then inflates the stomach by blowing and makes passes with it over the body of the thief and thus removes the spell, finally he fastens a *rukwaru* or strip of the goat skin on the thief's wrist; the thief has to pay a sheep to the Mweithaga as a fee. If the theft is that of such a thing as sugar cane the thief has to find the sacrificial goat and then be purified as above described.

No Mweithaga may eat any wild game, in no case can he even wear the skin of a wild beast, the only exceptions to this law are that they can eat locusts and they can make honey bags out of the skin of the *ngunu*, a small reddish antelope, probably a duiker.

For all their magical powers the Eithaga are subject to the incidence of *thaku* just the same as other people, and are also subject to the power of the evil eye like other folk.

There is a kind of constitutional antipathy between the Eithaga and the smiths of the tribe, and it is said that there are no Eithaga smiths. A Mweithaga may not sleep in a smith's house or *vice-versa*, if this did occur it is believed that illness or even death would supervene. The evil spell can, however, be removed by the owner of the house, that is to say, if a smith sleep in the house of a Mweithaga, the Mweithaga could remove the evil, and *vice-versa*.

Smiths are believed to possess magical powers similar to those of the Eithaga, and to obtain these from the tools of their trade—from the fire, the iron, the bellows and the anvil.

If, for instance, a smith is forging a weapon and when it is white hot he plunges it into water saying "May such and such a village cool as this iron is cooling," evil effects will fall on the village. Only that smith or another can remove the spell, a medicine man has no power over a smith's magic.

The Kikuyu are very afraid of the Eithaga, and in former days after someone had been killed by their black art the elders would induce one of them to come and remove the spell from all the people of the village where the man had died, they

would then collect as many of the members of the clan as they could find and insist on them taking the oath known as *ku-ring'a thenge* by which they would swear not to bewitch any more of their neighbours. Sometimes, however, they would turn out *en masse* and slaughter all the Eithaga they could lay their hands on. It is said that a Kikuyu would never enter the village of a Mweithaga uninvited.

If a Mweithaga goes to a village and becomes embroiled in a quarrel with a member of another tribe, goats must be exchanged to make the peace, and the Mweithaga must spit on the other party to obviate any evil effects, the Mweithaga will then invite the other man to his village to drink beer with him, and will take a sip from a horn of beer and then eject it back into the horn, the man then drinks the beer, and after that he is immune from the effects of any Eithaga magic.

The Eithaga are believed to have the power of protecting forest, and their powers are sometimes invoked for this purpose. If a man wishes to protect a patch of forest on his property he sends for a Mweithaga to put a spell on it, the magician proceeds to the spot with the local elders and takes with him a cooking pot taken from the deserted hut of a deceased person. He fills this with water taken from each spring and stream in the piece of forest, and boils it on a fire made on a path in the said forest, the pot is supported on three stones, after this a little of the water is poured back into each of the springs or streams, and the pot is then shattered by dropping one of the hearth stones on it. The magician then blows his horn and announces that if anyone cuts the trees in the forest his heart will burst forth like the blasts of the horn.

A Kikuyu oracle.

There lives in South Kikuyu-land an elder named Kichura or Thiga wa Wairumbi wa Kaumo of the Kachiko clan and the Njenga generation or *rika*, who is credited with the extraordinary power of being the recipient of messages from the Supreme Being and in consequence the gift of prophecy. He was interviewed and cross-examined by the writer, and stated that at intervals, about twice a year, during the night he falls into a deeper sleep than usual, a trance in fact, and that while in this condition he is taken out of his bed and statements are made to him by a voice, but he cannot see who gives him the message. The trance always occurs at night, and he is generally taken outside his house while in this cataleptic condition, but says that he never remembers being able to distinguish the huts or any familiar objects in the village. The interior of the hut appears to him to be lighted up, and the message comes with a booming sound which he understands.

He stated that one day he went to visit an elder named Kibutu, and he was seized during the night and taken bodily through the thatch of the roof, and was found on the top of the hut next morning. On another occasion a young man of the warrior class, *mwanake*, belonging to his village was sleeping alongside him in his hut when he was temporarily carried off, and the young man's hair all came off as if it had been shaved, and in the morning it was found lying in a heap on the floor by the bed, and the owner had no idea how it had occurred.

He does not sleep in an ordinary hut with his wife but in a *thingira* or bachelor hut with another elder, and when he is seized with one of his trances the other elder will wake up and find he has gone, but does not see him go or return.

The day following one of his seizures he collects the elders and delivers to them his message. He states that after one of these seizures he is very exhausted, and for three days cannot rise from his bed. His father and paternal grandfather had this gift or power, and he says that his father told him that his paternal grandmother had three breasts, two on her bosom and one on her back, but whether he considered that this had any connection with the other phenomena he did not disclose.

He stated that he believed the gift came from God and not from the *ngomia* or ancestral spirits, and that if he did not deliver to the people the messages he receives he would be stricken with sickness. He says that he was invested with this power when he was a stripling, soon after he had been circumcised. One morning he woke up with his two hands tightly clasped, and he passed blood instead of urine for nine days, and a big medicine man named *Wangnendu* was then called in, a goat was killed, and the medicine man tied *rukwaru* bracelets of the skin on to the patient's wrists. The hæmaturia then stopped, and his hands relaxed, and he was able to open them, and it was found that he had fifteen *mbugu* in each hand. These were white stones such as are used in a medicine man's divination gourd. The medicine man then brought a small medicine gourd and placed the *mbugu* therein.

Kichuru still has the gourd with the thirty *mbugu*, and relates how on one occasion his hut was burnt down and his gourd was destroyed in the fire, but that the *mbugu* were found quite uninjured in the ashes. He was asked whether he considered that his powers were intimately connected with these stones, and he stated that he did not believe he could lose them, but if by some mischance they should be lost that God would give him some more, and that even if they were lost that he would receive oracles as before.

He gave examples as the kind of messages he receives, and said that on one occasion some time before the advent of Europeans he was told that the Masai would be severely stricken with small-pox, and that subsequently many would settle among the Kikuyu, and shortly afterwards it happened accordingly. On another occasion he was told that a white race would enter the country and that they and the Kikuyu would live side by side in this country, and now it has come to pass.

He was seized before the great famine of 1900 and foretold its arrival. Later on he was told to inform the Kikuyu to sacrifice at the *mugumo* sacred fig trees a white sheep, a red sheep and a black male goat, and that the chief Kinanjui was to sacrifice a *mori*, white heifer, at the head waters of the Mbagathi River. These orders were obeyed, and the famine and small-pox were lifted from the land.

Early in the present season he was told that the maize and other grains would be lost by drought, and that the food being planted now (April, 1911)

would come to a good harvest. He was also told that during the present year the young people would suffer greatly from dysentery, and that they were to sacrifice sheep at the sacred fig trees, and that the women and children were to put bracelets from the skins of the sacrificed sheep on their wrists. Many have done so, and those who have obeyed will escape the visitation. After this he says that small-pox will come from the west of the country, and attack people from Karuri's (east slopes of Nandarna Mountain) to Limorn. The disease will gradually work its course eastward and decrease in intensity. When he delivers one of his oracular utterances the *athuri ya Kiama*, elders of the council, bring him a sheep and a gourd of beer. He kills the former and eats it, and the beer is returned to the elders to drink.

He says that sometimes when rain does not come he is accused of stopping it, but that such accusations are due to ignorance, that he is merely the unconscious and involuntary agent for utterances from a Supreme Power, and that all he can do in such cases is to take a sheep to a sacred fig tree, sacrifice it there, and pray for rain, just like any other elder who is qualified to do so.

Names among the Kikuyu.

Every Kikuyu child receives two proper names. The first name, if a male, is that of his paternal grandfather *thiga*, and if a female that of her maternal grandmother *chuchu*. The second name is that of his father if a male.

In addition he generally receives another name at the time of circumcision, this is considered as a nickname, these generally refer to some peculiarity of character, habits or physique.

For instance, a boy will be called *kichuru* because he was said to drink a large amount of gravel as a child. If the lobe of a man's ear is broken he is called *kachuru*, if he happens to break a finger he is called *kara*.

The names are derived from animals such as *nugu*—a baboon, *njovu*—an elephant, *hiti*—hyena, *ngui*—a dog.

From names of natural objects, such as *kamiti*—trees, *kegio*—a wild hibiscus used by the Kikuyu for making fibre, *higa*—stone, *meriwa*—a thorn, *wa-rui*—a stream, *kirima*—a hill.

From names of weapons such as *kitimu*—a spear (used of a tall thin man), *kakiu*—a sword, *njuguma*—a club.

The Kikuyu Kichandi or Gourd of Song.

The *kichandi* or gourd of song is a great institution among the Kikuyu, and gives untold amusement to the younger people. They are usually narrow in shape and 10 inches to 1 foot long, and are inscribed with designs from the neck to the rounded end, and strings of cowrie shells are fastened round the circumference

at intervals, the cowries are attached to fine leather strings and secured to the gourd by acacia thorns driven in like nails. The interior of the gourd contains seed of various trees, which, when the gourd is shaken, make a rattling sound. Some gourds have a cap of raw hide shrunk on the neck, others have a plug made of a piece of gourd.

Those with the most elaborate designs are said to come from Mwaitume, the Kikuyu country north of the Thika, and they have designs different from those made in South Kikuyu.

It is considered a considerable accomplishment for a young man to be an adept at guessing the significance of the designs on a *kichandi* and be able to sing the appropriate song for each. Most youths possess the knowledge to some extent, but only a comparatively few really excel, and if one meets another singing to his *kichandi* he will probably ask him to go through the songs, and if the singer makes three mistakes the gourd becomes forfeit to the person who points them out, and the owner will have to redeem it if he wishes to regain possession of it. The price of redemption is supposed to be a goat skin.

They are usually sold at about a rupee each.

The singer commences to sing about the designs at the rounded end of the gourd and works his way towards the mouth.

It can hardly be said that the artists who make these instruments and inscribe thereon the conventional designs consider they have any magical value, but it is probable that in early times it was so, because they are still half in joke designated by the name of *mundu mugo*, which means a medicine man. They were formerly bought for four goat skins and some beads, and the purchaser upon returning to his village had first to sing its song before his father and received from him a goat, which was said to be done to avert any ill luck, which certainly gives one the idea that there was some magic connected with the business; he then had to sing before his uncle and received a present from him; he then sang before his grandmother, *tata*, and received from her a piece of iron. He then performed before the girls of the village.

Each verse refers to a particular design, and some of the songs are on the principle of "The house that Jack built." The singing is conducted with great vigour and is very rhythmical, and has the usual minor intonation. A number of verses have been translated and are given below; it is regretted, however, that the rhythm has been lost in the process, but the general idea is preserved as closely as possible.

TRANSLATION OF THE SONG OF A KIKUYU WHEN PLAYING A KICHANDI.

(1) *Itina lya ngondi*, the hartebeest's rump :—

I set forth and met a hartebeest by the way.
His hind quarters were quivering with fatness.
I made my salaams to this beast,

And my salutation was at once returned.¹
 These courtesies were those of the plains,
 So I plucked two blades of grass
 And strewed them by the side of the road (for luck).

NOTE.—It is a custom all over Central Africa to drop a little grass at cross roads, and this may have some reference to that custom.

¹ This refers to the custom of the hartebeest to nod its head when alarmed by the proximity of human being.

(2) *Mburya cha Wairetu*—the cicatrization of young women :—

I looked around and saw the scars on the breasts of the maidens.
 I went back to the huts and there I saw a smith
 Busily engaged in forging a razor (for the purpose of cicatrizing the girls—this is understood).

(3) *Mbura*—rain :—

When the rain pours steadily down,
 Then is the time for planting pumpkins,
 Then they grow and a piece of stick is planted for the vine to bear upon.
 The pumpkin ripens and it is plucked
 When my mother is sowing *mawe*,²
 But I am busy the whole day long playing my *kichandi*.

² *Mawe* is a small millet-like grain.

(4) *Migwe*—arrows :—

I set forth and found an arrow maker ;
 I paid him the usual salutations
 And asked him to sell me a bow and arrows ;
 I also begged for a quiver to carry the arrows,
 And I asked for some feathers to mend the arrows.

(5) *Njira*—road :—

When a man takes a walk on the road with his *kichandi*
 And meets with another player by the way,
 The proper thing is to salute each other ;
 And one asks the other, what do I hear ?
 Who is this who is singing, shaking his *kichandi* ?
 Are you speaking the truth or only deceiving the people ?

(The insinuation being that the speaker does not understand the burden of the other's song.)

(6) *Njata kairumbi*—the morning star :—

When the morning star comes out and shines,
 I too came out of my house.

I wandered about and then came back to my village
 Without finding food or profit.
 I entered into a house and found the elders gathered together ;
 So I sat beside them and began to abuse them,
 Saying, O ye elders, why have you brought me into the world and here am I a poor
 man.

(7) *Njata Kirimira*—the Pleiades :—

When the pleiades meet with the moon
 The people assemble and take the oath of the blue beads.
 If a man who plays a kichandi comes to a place
 And finds another singing or playing,
 He must stay and hear the song,
 For if he passes by the oath is sure to catch him.

NOTE.—If a person passes a place where the people are singing and playing a *kichandi*, they call out to him to join in, saying, "If you pass by you will be seized by the oath of the *chuma cha Mchugu*," the blue beads, it is said to be only a joke.

The Kikuyu say that the Pleiades is the mark in the heavens to show the people when to plant their crops ; they plant when this constellation is in a certain position early in the night.

(8) *Iroli ya thongo*—the holes in the kichandi.—There are numerous small holes pierced in the gourd, and acacia thorns are stuck into these from the outside, and they increase the sound of the instrument because the beans and seeds inside the gourd rattle against the thorns. *Iroli ya thongo* literally means the hole in the skull of a one-eyed man, *i.e.*, the hole where the missing eye should be.

I paid my salaams to a hole.
 The hole was then filled up (by a thorn)
 When the gourd was full of salaams.
 I then went back to my village.
 I passed by a house and saw a wooden mortar.
 The mortar was for crushing sugar cane for beer.
 The beer will cause the elders to salaam each other.
 The salaams (in the gourd) spoke to the elders and said :
 I am hanging here on a wooden nail,
 A drinking horn¹ of the elders is also hung here too ;
 And behold I look down and see a stream of black ants climbing up and making their home therein.

NOTE.—The *kichandi* gourd is supposed to become full of compliments as the round of songs prompted by the figures on the gourd is completed.

¹ In Kikuyu native beer is only supposed to be drunk out of a cow's horn.

(9) *Lina*—name :—

We were met together for choosing our names (at the circumcision feast).
 A rainbow came and seized our names and scattered them.
 When planting potatoes the porcupine came and dug them up.

The porcupine ran away and met an ant bear on the way.
 The ant bear began to dig a hole but he met a hunter.
 The hunter was armed with a bow and arrows.
 The hunter drank water at the Tana River.
 He cooked his food, took his knife and ate.
 He then arose and entered a wood, peering ahead with his eyes.
 He suddenly saw a spider's web before him.
 The web covered his face and he could not see.
 He then plucked some leaves¹ and cleaned his face.

¹ Certain leaves are used by the Kikuyu to cleanse their bodies when water is not available or possibly by way of lustration, the leaves used are those of the *Machii*, *Meteri*, *Machura* and *Malinda* bushes.

(10) *Miguwa ya Mugwa*—Swahili, *Miiba ya Mgunga*—acacia thorns :—

And the thorns of an acacia bush pierced his eyes.

(This refers to the hunter in No. 9.) The thorns are those referred to in note at head of No. 8.

(11) *Mukuha wa kutunerera*—a needle for sewing with :—

I took a needle for sewing a bag,
 I twisted the fibre for making my thread.
 When the thread was finished I measured it
 To see if it was enough for the bag.
 I then called out to my wife² and said,
 Bring here to me the bag
 That I may put my *kichandi* therein.

² He called to his wife because the woman would actually make the bag. The Kikuyu string bag is called *chondo*.

(12) *Mukwa na Kihochō* or *Mulathi*—the leather strap and the wooden nail :—

The wooden nail referred to is stuck into the wall of the hut to hang articles on, the *mukwa* is a long thong used for carrying a load on the back, the thong passes over the forehead.

When the bag (*chondo*) is finished
 A leather strap is sewn on for a handle.
 With these straps we carry our sugar cane,
 And tie together our firewood and put it in the bag.
 When work is done we hang up the bag and our *kichandi*,
 And in the morning go out and make holes for playing *bau*.³

³ *Bau* is a game which has spread all over Central Africa, thirty-two holes are made in the ground or on a board, and the players move pebbles or seeds from hole to hole according to rules.

(13) *Muwezya Ukicharikya*—when the beans are ripe and burst :—

When the beans¹ are ripe and burst,
 Are burst and scattered o'er the ground,
 We haste to pick them up to put in the *kichandi*.

¹ The beans referred to are those of a leguminous tree widely known as the *msekese* and they are collected to put in the dancing gourds to form the rattle.

(14) *Makoni*—bark :—

When the banana flower comes out,
 A ring mark on the stalk is seen,
 The covering leaves then unfold and fall,
 The young fruit is then first seen.

(15) *Njoka*—a snake :—

I had one day a call of nature in the bush,
 And I met a savage snake.
 I called for help and a man came and struck the snake.
 The snake slid away and entered a wood.
 Then it split a piece of firewood,
 And placed it upright in the way (to deceive me).
 And in the meantime slipped into its hole.
 I followed it and pulled it out and threw it into the bush again.
 I then went on and met an upper grinding stone,²
 And the stone was grinding maize.
 And I said to it let us cook.
 But it lay still and never answered a word.

² The upper stone is held in the hand and rubbed on a big stone slab, the Swahilis call it *Mwana jiwe*, the child of the stone.

(16) *Tama*—cloth :—

A tailor sits down and sews clothes.
 And I sing and send out salaams.
 I met a blacksmith forging knives.
 I returned home and grumbled to my brothers,
 And I said When a child grows up
 He must stay at home like a he goat.³

³ The implied idea being that there is no profit in wandering about from village to village playing the *kichandi*.

(17) *Njuki*—bees :—

In due season we hang a beehive on a tree.
 Then father goes up and takes the honey.
 He climbs up with a bag and puts the honey in it.
 He calls his wife who mixes the honey with water.

The husband asks his wife,
Is the honey (beer) ready to drink ?
They spend the whole day drinking the beer.
The whole company becomes overcome with liquor.
They slaughter a goat and eat it.
The skin they use for a cloth to wear.
They then call out for an elder.
The old man goes and settles the case.
They then call out for a medicine man.
He comes and gives medicine to make them sick.
And the medicine man says to them all,
I see not anything evil only peace.

NOTE.—They drink beer, quarrel, an elder comes and settles the dispute, the medicine man comes and purifies them and tells them that the whole affair is a storm in a tea-cup.

(18) *Nderi*—marabou stork :—

A marabou stork was killed by a hunter,
And I took the feathers and wore them,
And so adorned, a girl set her heart on me,
I took her away and she conceived.
The elders came to sit in judgment on me.
So I bought a sheep and killed it for them and said,
I am paying this for the mischief I have done.
The elders accepted my repentance and said to me,
A wrong like this must not be done again ;
If a man has goats it is better for him
To pay out his wealth and properly marry a girl.

(19) *Ndumunya*—bracelet :—

Bracelets are made for adorning young girls
At the time of circumcision feast.
They are then free from taunts of the children,
But still being children cannot eat bananas.¹

¹ This means that they are not ready for marriage—intercourse with the opposite sex—a double entendre.

(20) *Thongoli*—trumpet made of oryx horn :—

I hear the sound of a horn,
Which is blown when the new moon is seen.
I raised my eyes and looked into the clouds,
And there in the sky I saw the moon.

(21) *Ndundu*—a council :—

In our land (Kikuyu) only the elders come to the council.
 For only they know how to give out the law.
 If a man kills another the slayer is caught.
 When he is caught and brought before the elders
 The elders say "Let him swear to his guilt by an oath."
 But maybe the oath (ordeal) does not touch him.
 The elders then go and consult with each other,
 And they come back and say he must pay up a fine.
 And the man then declares I will kill this sheep,
 And swear that I did not commit this deed.
 But the laws are all made by the elders,
 And the elders shall teach the people to follow the law.

(22) *Ndani*—inside (the hut) :—

He was a sweeper of the goat hut.
 He gives salt to the goats to lick.
 He drives them all out of the village.
 The goats then rest for a while.
 When they awake he drives them to pasture.
 There they eat grass till his father calls,
 And he brings them all home safe to the kraal.

(23) *Nguru*—a tortoise :—

A tortoise slept by the road-side.
 First he screamed and then was silent.
 Then he spoke to the young men
 And said, When those bracelets are finished
 It will be selfish to wear them yourselves,
 You must give to the maidens in the village.

(24) *Ngotho ya Wathuri*—the ivory armlet of an elder :—

When I made my *kichandi*
 I decorated it with many devices,
 But when I counted them over
 I found one pattern was missing,
 And that was the armlet of an elder.
 So I went forth and sought for one
 And carved its likeness on my *kichandi*.

(25) *Nyali or nyama* (Kikuyu)—*muhanga* (Swahili)—aut bear :—

One day I went out for a walk,
 I made for the place where the elders were assembled
 As I wished to show the people my *kichandi*.

By the way I met an ant bear,¹
It was a very lucky beast to encounter,
So I returned to my house and carved it on my *kichandi*.

¹ If one meets an ant bear by day it is an omen of long life, being a nocturnal beast it is very rarely seen by day.

(26) *Thatu*—mist:—

When I was making my *kichandi*
I found a place for one more device.
So I sallied forth to search for a design
Which would be suitable to add to its fellows.
But when I looked outside rain was falling,
And the mist had covered the earth,
So I came back and made a sign for the mist.

(27) *Nyongo Nyongo*—snail:—

I went forth in the morning and gazed around.
Crawling along the road I espied a snail,
And I said this is a good beast to carve on my gourd.
I thus went back to my house and carved it at once on my gourd.
I then went to where the elders were seated,
All the people saw it and were greatly amused.

There are traces of an archaic dialect in the songs of the *kichandi* for instance:—

Njata kairumbi means the evening star in the *kichandi* songs, whereas in ordinary speech the evening or morning star is *nya kiakia*.

The phrase *njata kairumbi* also sometimes has another meaning in the *kichandi* poetry, and that is the veiling of the moon by a fog, and if next morning the fog, *thatu*, is still enveloping the country the owner of a *kichandi* will call a medicine man who is skilled at rain-making, *muhuku mbura*, and present him with two goat skins and two bundles of sugar cane; the medicine man will then make medicine, and the sun and the moon will re-appear once more.

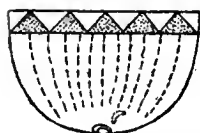
The appropriate song on this occasion is as follows; it is supposed to be addressed to the medicine man when he begs him to come and remove the fog by his spell:—

I have come to seek you,
And this *kichandi* is yours,
But what have you written thereon?
For you have forbidden the children
To go to the shamba to seek for food;
But I must go from my village
To cut sugar cane for the children to eat.

I must cut the sugar cane into bits
 And pack them away in my basket,
 The basket wherein the *kichandi* lies.
 When this is done I beg of you
 To spit on the children for luck,
 To dry the rain and drive away the mist.

When a Kikuyu sees a morning star he picks up a little earth, spits on it and throws in the direction of the star; he then takes a little mutton fat and rubs it over his face. This is said to be done because the star is looked upon as a manifestation of *Engai*, the Supreme Being.

THE PICTOGRAPHS ON A KICHANDI KIKUYU DANCING GOURD.



Ligito—leather belt worn by women.

Itinira ya ngondi—the hind quarters of a hartebeest.



Ruochi miviri—a stooping person. Another interpretation was
mbura—rain.



Iruri ya thongo—the iris of the eye.

Njoya—the feathering of an arrow.



Njata kairumbi—a comet, also evening star,

or

Mburia ya wairitu—cicatrizization on a woman's abdomen.



Nya kininjango or *nyungu*—cooking pot.



Juwa—the sun and the rays coming from it at sunset,

or

Mboi mbui—spider.



Mweri—moon, or *Ziaka*—a quiver for arrows.



Ukunya ya mbura—rainbow,

or

Musongorima—the winding hole of a snake below the ground.



Itara—a loft in a hut to stack firewood.



Mwarati—a trough for goats to eat salt from,
or
Thomi—the elders' meeting-place.



Ngotho ya Ngotho ya wathuri—ivory armlet worn by elders.



Ira—udder of a cow.



Njata kilimila—the Pleiades,
or
Kizambo—an ants' nest in a tree.



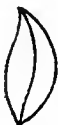
Kiturwa—stool.



Mburia—the tattooing on the breast of a girl,
or
Kihocho cha kichandi—the bag to carry the *kichandi* in.



Ndundu—the meeting of the elders in council (they sit in a circle).



Ngonyongo—snail (slug),
or
Songori—greater Kudu antelope.



Mugwi—arrow point.



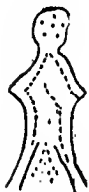
Uta—bow.



Tama—cotton cloth.



Kiondo—woven bag carried by women,
or
Nguru—tortoise.

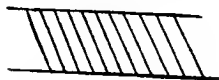


Nyama—ant bear, *arctropus* Mohanga in Swahili.

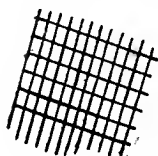


Thagana—Tana river, or *Sagana*.

This word is probably an inverted form of the Galla word *Galana* for river.



Njege—porcupine.



Thatu—mist or fog,
or
Wumbui—spider's web.



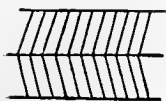
Njira—the road from the village to the river.



Ngethia cigomani—the meeting-place of two persons on a road.



Njuki—honey.



Nderi—the pestle used for husking grain in mortars.



Mukwa—a leather strap used for carrying loads,

or

Ndundu ya wathuri—secret conference of elders.



Wire wrapping on mouth of gourd.

Njomoya—the wire bracelet on a man's wrist.



Nyamu ya athi—snake.

Chuma cha mchugu—the sacred bead,

or

Mwere—the moon,

or

Ukungu ya mbura—rainbow,

or

Ndiri—a mortar for crushing grain.



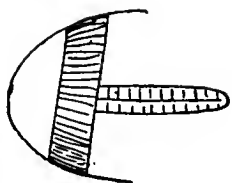
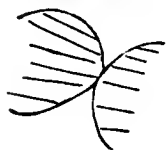
Thomi—the meeting-place of the elders.

The cowries sewn on the outside of the gourd are called *ngugutu*.

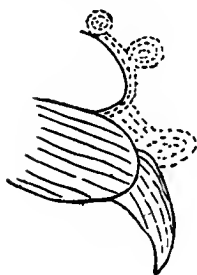
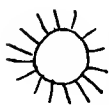
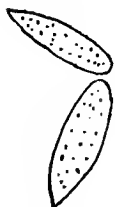
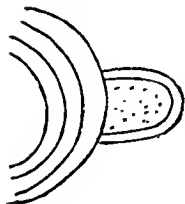
The seeds inside to make the rattle are called *mwethia*.

It will be noted that sometimes there appear to be two or more interpretations, the reason of this is that the gourd studied was not obtained direct from the original owner but at third hand through a chief. The interpretation of it was obtained through two separate individuals, and when their versions varied there was nothing for it but to record the differences. If the gourd had been obtained from the maker or from the original owner, he would have only had one version of the significance of the pictographs.

The following are representations of the pictographs on another dancing gourd or *kichandi*, with the explanation of each one. In this case the explanation was that given by the artist who inscribed the designs on the gourd. The impression, current among other *kikuyu*, was that he did not excel as a designer, and had not executed his work very well; he admitted that the pictographs might be better done but complained that he had not his proper tools. There is little doubt that if he had had to please the critical eye of an important chief he would have taken more trouble.

*Itinira ya ngondi*—hind-quarters of a hartebeest.*Iindi ya ngondi*—backbone of hartebeest.(Nearly every *kichandi* commences with this design.)*Murugu—Fumbwi* (*Ki-Swahili Syn.*)—a bird which lives among the sugar cane.*Kithambo*—ants' nest in a tree.

(These are common objects in the Kikuyu forest, they are made of a black paste, which is moulded in a more or less spherical shape around one of the upper branches of a tree.)

*Mundu wa Kichandi*—the owner of the *Kichandi*.*Mwei*—the moon.*Ndumwa cha wairctu*—cicatrization of women.*Kihochia*—a pole erected inside a hut to hang bags, etc., on, the branches on it are lopped off short to form pegs.*Mugwi*—arrow.



Mkunga mburu—rainbow.



Ngugutu—cowrie.

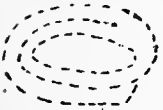


Ndiri—pestle for crushing sugar cane; this design is really intended for a representation of a woman using an *ndiri*.

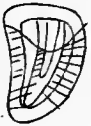


Chuma cha mchugu—the sacred bead.

(Possibly the rays represent the magic supposed to emanate from the bead.)



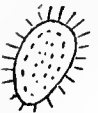
Iyu ma thuthuthuma—a man whose abdomen becomes distended owing to excessive flatulence.



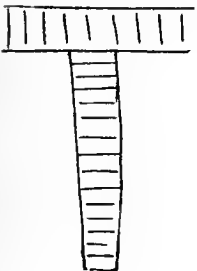
Ngare—leopard.



Njata kairumbi—morning star.



Kirimira—Pleiades.



Thagana—River Tana.

This, an incised band running transversely round the gourd—a conventional representation of this river—appears on nearly all these gourds, possibly the Tana valley was the place of their origin.

Thomi—the meeting-place of the elders.



Umei—dew—probably a conventional representation of a dewdrop.



Njuki—bees—a swarm of bees settling on a tree.



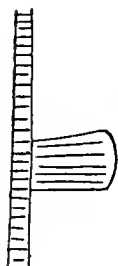
Ngayo—a shield.

Muwimi—a hunter.



Muria ya mbura—a rain-maker.

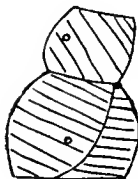
(The vertical lines probably represent the rain falling.)



Munyenyi—a forest tree.

(This design runs from one end of the gourd to the other.)

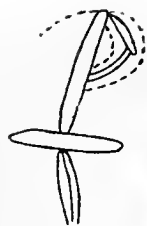
Ngigi—locusts.



Nlundu ya athuri—a meeting of the council of elders.



Ndundu ya moranja—a meeting of the tribesmen of the degree below the councillors.



Thiaka—a quiver of arrows the elder is wearing.

Muthuri—an elder.

Mututhi—the bunch of sacred leaves carried by an elder.

Muthegi—the staff which only elders are allowed to carry.



Mucetetu a kigirwa kwa ithe—a girl being taken from her father's house by her husband.



Thongori—a horn trumpet.



Ugimbi—*mtama* grain (Sorghum).

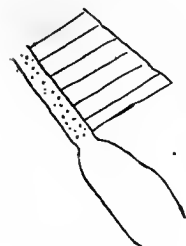


Mucethia—the seeds inside the *kichandi* which make a rattle when it is shaken.

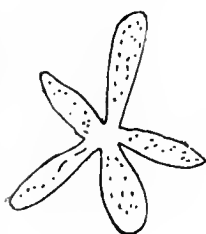


Rumuru—sand flies or midges.

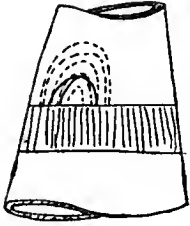
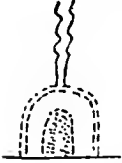
(A graphical representation of a cloud of insects.)



Mwai wa miatu—a beehive maker.



Bumbwi—spider's web.

*Miura*—bellows for forge.*Irumbi*—mist.*Thongorima*—burrow in which the larvæ of the tiger beetle live.*Nguyo*—colobus monkey.*Munyor*—fine chain to carry *kichandi* by.*Nyura nyura*—the cork or stopper of the *kichandi*.

CONCLUDING REMARKS.

At the risk of wearying the reader's attention, it is desired to make a few remarks in conclusion and in explanation. It is frankly admitted that, although the writer has lived in close touch with the Kikuyu for some years, and maintained a lively interest in this branch of study, he had no idea of the extent and variety of the ceremonial connected with the *thahu* beliefs and cognate subjects.

It is, perhaps, hardly necessary to demonstrate the practical utility of research into these phases of native sociology, but it may be of interest to describe how attention came to be directed towards this subject. The Kikuyu people form the bulk of the labour supply of the upland colonists in British East Africa, and complaints are often received from employers of its capricious nature, and upon investigation it was found that, apart from the natural ebb and flow of this supply, the charge of caprice was well founded, *i.e.*, there were many cases of desertion and often without any suspicion of ill-treatment, further, in some cases it was discovered that this desertion was traceable to a belief on the part of the individual that it was necessary to go away to get *dawa*, which is the general local synonym for medicine, whether of the nature of drugs or magical in character. The question then arose as to why such frequent calls occurred, and it was a long time before a definite clue could be obtained, but the principles gradually unfolded and became clear and were found to rest on the necessity of obtaining ceremonial purification to free the individual from either a *thahu* or the impurity left by a death in the family, as has been described in this and the previous paper, in fact, it will be realized how complex a native's social life may be. It may not at first sight be obvious how a knowledge of these beliefs can ameliorate the difficulty, but the point is that



FIG. 1.



FIG. 2.



FIG. 3.

KICHANDI KIKUYU DANCING GOURDS.
FURTHER RESEARCHES INTO KIKUYU AND KAMBA RELIGIOUS BELIEFS AND CUSTOMS.

if a man deserts without leave he breaks his contract of service and dare not venture back for a long time in case he should be identified and punished, whereas if he knows that his master understands his beliefs he will probably go and tell him and ask if he can go away for a day or so and carry out the necessary ceremonies, and will then usually come back. It may be a little tiresome to the master, but the better feeling and mutual confidence which is induced pays in every way. This is not mere theory, for the men who do get into close touch with their employes lose very few, and can generally get more men than they require. This is quoted as an example of the practical value of ethnological inquiry in daily life, which after all is not a bad working test.

The method employed in collecting the material has been to discuss the questions with as many responsible elders as possible selected from both guilds of the tribe, and compare and correct the statements so obtained. It has been a work of great interest, though often very tedious, but probably more tedious to the informer than to the recorder. Theories as to the explanation and insignificance of the various features of the ritual have only been rarely attempted, as it is believed that it is generally foolish for the field worker to dogmatize on these matters, that that is better left to the professional ethnologist who has the field work of a continent to guide him, and whose intellect is trained in the habit of deduction or induction with regard to these difficult problems. There is, however, one warning which it is desired to impress upon persons living in the country and have opportunities of research, and that is that the last word has not been said upon these questions, and it is hoped that these observations will only encourage further research and the keenest criticism. It must be remembered that very few, in fact hardly any, of the ceremonials described in this paper have been witnessed by Europeans, and if they have, they have not been observed and described by eyes trained to note the important features, and it may well happen that with the best intentions the elders may have from time to time omitted some point which, when accurately described, may throw a flood of light upon some apparently obscure point in the ritual. This is where the district officer and the missionary can, if they choose, play such an important part; we have many missionaries who have a thorough knowledge of the vernaculars of the tribes, and district officers who, if not such good linguists, are in intimate touch with these people; what chances these men have if they would only train themselves for the task. Signs of a renaissance are, however, not wanting, and it is believed that administrative officers are yearly taking more and more scientific interest in their people, and one of the missionary societies it is said, has formed a committee for the study of native customs. The missionaries must, however, realize the necessity of caution in collecting observations of pagan customs from persons who have been for some time in close contact with their teaching, which often has the effect of causing their pupils to ridicule time-honoured ceremonial and, moreover, missionaries are, as a rule, only in close touch with the rising generation who are not initiated in the procedure, and have little to do with the elders of the tribe.

ON THE CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES, AND SOME NEW, AND LITTLE KNOWN, WELL-MARKED HORIZONS AND CULTURES.

BY W. J. LEWIS ABBOTT, F.G.S., F.R.A.I.

WITH PLATES XLV—LXIV.

PART I.

SINCE Lord Avebury's first division of the Stone ages into older and newer, palæolithic and neolithic, various attempts at further subdivisions have been made. Westropp suggested that we should retain the term palæolithic for the chipped implements of the gravels, and the term neolithic for the polished tools only; employing the term mesolithic for the fine chipped "surface" implements which had not been ground.¹ The finding of these two latter classes in constant association precluded the acceptance of the term mesolithic, and it was for some time disregarded. Subsequently it was advocated, particularly by my friend the late Mr. John Allen Brown² for a class of implements which, from their unaltered or bleached condition and mode of occurrence, were connected with neoliths, while the method of their working, their heavy outline, and sometimes general form, associated them with palæoliths; these he regarded as belonging to a period intermediate between the palæolithic and neolithic.

Unfortunately with our minds so imbued with the great law of "onward and upward," which we see, upon the whole, pervading man's tenancy upon earth, we are apt to think that the evolution of culture has progressed along a line of unbroken chronological sequence: nothing could be more misleading. As an example of how far wrong such an idea can lead one we have only to read the hopeless labyrinth of error into which Westropp led himself in his seven ages.³ There can never be a universal contemporaneity of an "industry," and any attempt to make similar "cultures" of the same age over widely separated areas will receive but little support from the facts of the field. We have assumed, not without great justification, that our river valleys have been slowly eroded by the great arteries of the country; which, in their seaward passages deposited, upon the shoulders of the valleys, the gravels and sands in which the worked flints are found. That these gradually became of less and less altitude, as the river wore

¹ *Prehistoric Phases*, H. M. Westropp, p. xxiv.

² "Continuation of the Palæolithic and neolithic periods," *Journ. Anth. Inst.*, xxxii.

³ *Prehistoric Phases*, *op. cit.*, pp. 41-95.

down its bed, so that the implements at the greatest number of feet above O.D., or the present level of the nearest stream are always the oldest, and *vice versa*.¹ No wonder that all attempts at the classification of phases of culture based upon this method alone should have failed.

We must for ever bear in mind the facts of differential and intermittent elevation and depression, as pointed out by my colleagues Messrs. Hinton and Kennard,² Messrs. Kennard and Jackson,³ and several others; and that in the progression of river curves deposits of all ages are relaid again and again.

For several decades I have felt puzzled to account for the idea of the classification of industries solely upon altitudes ever being held. If we consider North-Western Europe at the Early Pleistocene Period stretching away into the Atlantic, and northwards to the Faroes drained by the Great North River, which received such immense tributaries as the Pre-Severn-Proto-Thames from the west, the Rhine, the Elbe, and probably the drainers of the Baltic area, and other great arteries, stretching away to Lapland, and the present Arctic Circle, we can form some idea of the vast amount of water it must at times have carried; waters which not only represented rainfall, but the melting of the Continental glaciers; and with a supply so immense, and so intermittent, we can realise what bursting of former boundaries there must at times have been; and what a record was written in Dogger Bank and other land, now covered by the North Sea. But the idea that strikes us most is that, with an estuary in such a high latitude, and waters already charged with the ice of which they were born, its mouth must, more than once, have been choked up with ice, and the waters must have been ponded back, up the present valleys and bordering lowlands;⁴ under which conditions, not only would our flood loams and brick-earths have been deposited, whose altitudes would have been determined by the volume of the flood-waters, but gravels would have been picked up, old land-surfaces swept of their surface-debris of various ages, whether they were the products of sub-aërial denudation or the flints worked by man, and left on the surface in any of the antecedent ages to be relaid in those heterogeneous and in many ways puzzling deposits we call River Drifts.

But not only have the great Continental phenomena materially affected and disturbed the vertical sequence of our River Deposits; in different areas there have been tectonic movements and phenomena attending differential elevation, depression, and denudation, which have contributed to destroy a consecutive altitudinal chronology.⁵ In one of the valleys, to which I hope to refer on a future occasion—the Darenth—at certain places and altitudes we get well-established industries, and the relics of peculiar phases of culture; but in

¹ *Text Book of Geology*, Prestwich, vol. i, p. 92.

² "Contributions to the Pleistocene Geology of the Thames valley," M. A. C. Hinton and A. S. Kennard, F.G.S., *Essex Naturalist*, vol. xv, pp. 56-88.

³ *Journal of Conchology*, Oct., 1909.

⁴ "Superficial Deposits of North Kent," Goodchild, *Proc. Geol. Assoc.*, vol. ix, p. 155.

⁵ Hinton and Kennard, *op. cit.*

others, these and various other industries are hopelessly mixed up. In the early pre-Holmesdalian days the south-east prolongation of this river was over the counterescarp from the Weald,¹ passing what were afterwards the shoulders of the then un-born Shode, into which implements—which our Continental friends would call both chellean and acheulian—found their way; with the formation of the Holmesdale valley implements of these types were carried north-eastward. Long before this in the west of the area, in what appear to have been times of climatic severity, the surface of the land was being torn up and carried gorge-wards, and the stones left stuck at all angles in an unstratified condition by the transporting agent, with which were swept the somewhat rude types of the works of early man. Subsequently the western limb flowed under more tranquil and genial conditions, depositing evenly stratified beds of gravel at Limpsfield, but nevertheless cutting into the older gravels, and carrying their contents further down the valley. Then a new channel was cut back, or originated by an earth movement (seen at Dry Hill): a then recent later-palæolithic land-surface was attacked; but some of it was left, and the fresh implements reposing there to-day² tell the tale of how their unworn brethren are found in the valley below mixed with implements of all other ages.

Upon the Continent sometimes so rich in troglodytes of various cultures, systems of classification have been numerous: but I think we must admit that, however well these systems fit the areas upon which they were founded, they are hopelessly inapplicable to the conditions obtaining in this country.

From what has been adduced above—and many more reasons against the idea could be brought forward—I submit we may at once dispose of the idea of a classification based upon altitudes alone, seeing that the laying down of River Deposits has not always formed an orderly unbroken succession from the highest to the lowest.

Further, there are reasons why we cannot trust to contemporaneity even of similar industries. Palæolithic man was a hunter, not a settler in the strict sense of the word, he had no other home than the following of the spoor of the monarchs of the horns and antlers. He was ideally a nomad, with no incentive to civilization, he made his weapons of the chase as he had seen his father and his brothers; and his offspring did the same. Now and then in the history of the race a better flint-worker would appear, who might work in his own manner, and thus originate a new method of working. But all palæolithic men did not benefit by this outburst of simple genius, only an infinitesimal few ever knew of it, but in the absence of extensive social intercommunication, went on as their forefathers had done before them, and remained in ignorance of what we can recognize to-day, and trace the wanderings of such pioneers by the vestiges of their peculiar work which they have left behind.

¹ "The Ossiferous Fissures near Ightham," by W. J. Lewis Abbott, *Q.J.G.S.*, vol. 1, Figs. 1, 2 and 3.

² At Redlands, Chipstead.

All palæolithic men at any particular time were not working in the same manner, nor did the flint industry develop on the same lines, even in not very distant areas. Let us take a very early example. One of the oldest deposits in this country which can with good assurance be said to contain man-worked flints is now to be found (amongst other places) to the north of Wrotham upon the plateau at Stanstead. It is now a deep-seated gravel, with no surface indications save at some distance off, where a very early palæolithic valley cuts through it. Here, about 10 feet below the summit of the shoulders of the valley downwards, relics of this old deposit can be found sparsely distributed over the surface. At Parsonage Farm, beneath some 8 feet of sand and loam, it is to be found in an undisturbed state. It is a gravel in a dense iron pan. Clearing off the iron and manganese we find many of the flints are hard worn; and some freshly broken under the vicissitudes of gravel making. There are further other flints which, from their being broken in a manner so much less like the work of nature, and so exactly like the work of man, with such a constancy of type, that we feel they are the work of an intelligent being. But as in the Red Crag when deep-seated, the iron has not yet been oxydized to the beautiful red-yellow-brown characteristic of the plateau flints, when formed in the next division. In this stansteadian stage the flaked surfaces of the flints are not much altered, and are of a dark chalcedonic green-black-brown. The flakes have been removed, not by the rounded hammer-stone, but by flippings or batterings, in a way which can be imitated to-day. Further, the characteristic forms are also identical with the products of the next deposit, the lower ashian, where the characteristic almost rectangular comparatively small edge-work and quaint forms are exactly the same: the only difference is that the deposit having been in contact with meteoric waters the iron has become oxydized, giving the flints the characteristic "old brown" colour. The next deposit in point of culture is the fawkhamian, or transitional from pre-palæolithic to the palæolithic: here we have the work of the rounded hammer-stone—a discovery vying in importance with the discovery of the metals. But oddly enough although man uses the rounded hammer-stone to obtain his bulbed and parallel worked flakes (or blades), he worked their outlines into those use-incomprehensible forms, with the small "rectangular" edge-working, which latter work only decreases, as the rounded hammer-stone work increases. In the next stage (in this locality), the upper ashian, we have really good fairly fine work palæolithic bouchers. Here then, we have the transitional from the mainly edge-worked pre-palæolithic weapons through the ¹*heteroclastic* fawkhamian transitionals, to the ¹*homoclastic* palæoliths.

In other places, on all sides of this, only a few miles distant, we get a passage industry, for which many years ago, I proposed the term archæolithic, consisting of exceedingly rude ¹*megistoclastic*, ²*microclastic* work, which improves, and develops into ¹*holoclastic* typical palæoliths.

¹ Vide p. 465.

² Vide p. 466.

Further, with some peoples there has been a persistency of older types coming up with newly discovered forms and methods of working. An example of this is furnished by the fairlightian culture, which I hope to describe on a future occasion. I have no doubt that the first weapon of offence and defence used by the anthropoidea was a wooden club, similar to that carried by the gorilla to-day: the first object to be gained was an extended reach, and the next a heavier blow. But a club was too long for an effect at close quarters; a hand hammer-stone would give the heavier blow required, and deal with more refractory objects. If we take a pebble in the hand and strike a hard stone with it one, two, three or more flakes are split off from the striking place, sometimes at one blow, and a point put on, which makes it a very effective implement. Now, it is remarkable that so greatly was this tool appreciated by some peoples that it lasted down into historic times. From the hand it was only natural to transfer it to the end of the club, and thus acquire both extended reach, and a heavier and more effective blow; and the studded clubs, or stone-set maces as they are sometimes called, lasted till quite the historic period in Egypt. I know of no tool so spasmodically distributed as the club-stud. I have found very fine examples in the Cromer Forest Bed, under, and in various glacial deposits in England and Ireland, and in the glacial and upper gravels at Limpsfield: in various River Deposits from the highest down to the lowest. But the most important find of them was in the Ickelsham-Fairlight drift, where they were by far the most numerous implement. I have also obtained them from a very large number of neolithic settlements.

But although the original implement might have been as elementary, and rude, as suggested by the use-originated point; and although we frequently find pebbles with only the three or four flakes struck off, the club-studs are more often worked all over; one specimen from the Cromer Forest Bed being brought into shape by a great deal of parallel flaking in various planes.¹

On the other hand, one often sees them passing insensibly up into the boucher, in a manner that leaves no possible doubt that the classic implement was evolved along these lines, in at least some localities. Yet, further, there are numerous deposits of all ages teeming in varieties of forms, which contain nothing in any way suggestive of these characteristic tools.

Let us now turn for a minute to the all-important subject of different methods of working, which I submit are the most important indications of race relations. There are, *e.g.*, certain methods of working, which were employed in the French caves,² where they are met with for the first time; these were employed by the Hastings Kitchen Midden men³, and wherever the deposits containing the relics of this race are found the same characteristic work is present, whether we travel northwards into England and Belgium, or southwards into Africa or India. It is

¹ "Worked Flints from the Cromer Forest Bed," by W. J. Lewis Abbott, *Nat. Science*, vol. x, p. 89.

² *Rel. Aquit.*, P. XLII, Fig. 10.

³ "The Pigny Implements," W. J. Lewis Abbott, *Man*, 1909, No. 103.

true these old fellows had acquired another kind of work before they dispersed, and the two taken together enable us to trace the migrations of this culture.

Another instance might be cited of certain Irish implements, the spatulate scrapers and parallel-knives, ridge-backed, and concave ridge-backed, which find their prototypes in the hard-worn specimens from the Irish gravels of palæolithic age, but find no counterpart in the gravels of the Thames.

There is also another set of circumstances which meet the prehistoric anthropologist, and it is that man from childhood to maturity, is a phylogenetic recapitulation; and more than this, he often evinces the atavism peculiar to his own stock. This can easily be proved by experiment to-day, even if the subjects be adults. When a child begins flint-working he does not start in the neolithic stage; his "work"—if work you can call it—is essentially ¹*celoclastic*, a very large proportion of his blows will resolve; he has no command of the flaking plane. As time goes on he gains some idea—vague though it be—of form; he aims at, say, putting a point upon a boucher; but look at it! It is the only part of the implement that is devoid of all cutting or piercing property. Take any given implement you like, note its operating or work-effecting part. It is all for which the implement was made; all that elaborate work expended upon the other part of the surface is operatingly valueless; the outline so originated may be beautifully symmetrical, and may have cost no end of time and trouble. Yet it is not the cutting-edge, or the piercing point, this forms only a very small part of the implement; but it is nevertheless a part of its general outline. That outline or form becomes stereotyped, and by the young realised even before its uses: the result is that in the developing stages the youngsters try and simulate the outline, but alas! when it comes to the operating part, it is perfectly useless! Further, he starts in the eolithic stage, and he passes through the palæolithic; although his parents may be in the neolithic. This accounts for the remarkable examples we so often find of palæolithic work upon useless neoliths. As a lad I had heard of the discoveries of Boucher de Perthes, and living in a flint county tried to make flint implements before I had ever seen one! When, however, I saw them I was disappointed at my work, and at not being able to make anything just like the originals. It took me some time to be able to do this. Subsequently, I found the counterparts of my early attempts, and concluded that the palæoliths of Boucher de Perthes did not represent man's first attempts at flint working. But as few would accept the conclusions of the great Frenchman, none would admit of mine. Many years later, when Prestwich announced his second great acceptance, my task became easier. As a field-worker and collector, I have always felt the importance of the recognition of the fact that in all ages the children and novices have emulated the adults and adroits, but that their lithoclastic ontogeny would recapitulate their phylogeny.

There are numerous other cases that might be quoted to which I dare not refer,

¹ *Vide* p. 465.

indeed I must apologize for going into so many details. I am fully aware that I have already attempted altogether too much for a single paper, but I trust you will admit that I have said enough to show :—

1. That our river-gravels, loams, etc., have not always been deposited in an orderly unbroken vertical sequence from the highest down to the lowest.
2. That in times of excessive flooding and ponding back of waters deposits would again reach altitudes long since left high and dry, and become associated with other deposits laid down at times of other base levels.
3. That in the history of our river-valleys, implements of various ages become mixed up together.
4. That despite the foregoing, the periods of continual lowering of altitudes coincident with the general excavation of the valleys, might often have been very long, and they now contain not only the relics of definite cultures, but they may sometimes show an orderly evolution.
5. That in the development of the anthropoidea, a multitude of forms, and methods of working of implements, have replaced crude rude attempts, consequently the history of their evolution is written somewhere.
6. That palæolithic man was ideally nomadic and that different races of men in various states of civilization have lived in the same area at various times.
7. That the given types of implements have not always developed along the same lines, nor indeed had a monogenetic origin.
8. That all through the prehistoric ages, children and novices have emulated their elders and the adroits, and in their passage from child to man have recapitulated the stages passed through by the race.
9. That generalized outlines of implements may be obtained by quite distinct methods of working.
10. That neither altitude of the containing deposit, nor general outline or shape of the flint alone, is always of sufficient diagnostic value to enable us to determine the age of an implement, but to do this we must add the nature and method of its working.
11. That in doing this we shall recognize various assemblages of implements worked in distinctive manners, presenting characteristic forms, constituting industries or cultures, and that these supported by palæontology and geology must form the basal units of our classification.

I respectfully submit that it is not likely that a really good classification will be the work of an arm chair critic until very much first class field work has been

done. No one can expect to know all about everything, but each of us can work out his own particular field, and then when we have all specialized the features with which we have been made familiar in the field, and the day comes for a general classification, the various groups of implements, representing the different stages of culture, will become susceptible of allocation. I submit that to work out such a desired end, we must first establish well-marked horizons or industries, and for this purpose I propose taking the following, not only because they are for the most part very little known, but because I think they present features, at once both new and suitable for such a purpose.

NOMENCLATURE OF FLINT WORKING.

Unfortunately before we can make a critical examination of the various flint industries or cultures, it is absolutely necessary that we should give far more attention to the laws of flint fracture, and make ourselves familiar with the possibilities and impossibilities of man and nature, and to become fully acquainted with these we must spend years in study and experimental research in connection with the physics of flint fracture, the chemical processes involved, and the details of technique of working, *i.e.*, the diverse methods by which the various results have been, or can be, obtained. For several decades I have been at these, until I have amassed a vast quantity of facts, many of which, no doubt, I ought to have published many years ago. Into these, however, I do not propose to enter on this occasion. I should, however, be grateful if you would allow me to digress a minute to give a few words of explanation of a nomenclature I have found absolutely indispensable to express ideas and to signalize certain facts. At first sight this terminology might appear uncalled for; when, however, one finds themselves called upon to express all the many kinds of "work" that man has produced in the past in order to separate one implement or group of implements from another, its use becomes manifest.

When a worker first begins upon a flint, he finds that hitting it detaches a flake; he watches the direction it takes, but finds he has little or no control over the flaking plane. The flakes removed leave concave pits, and when facets are brought into contact with each other, the interfaccettial ridges are high; moreover the blows are not struck with the correct force and many of the flaking planes resolve, with the result that the surface becomes more or less hackly and covered with hollows, for which I propose the term *celoclastic*.

Ultimately he may get the mastery of the flaking plane, and he may even make it bend over in a desired direction, for which I use the term *clinoclastic*.

Sometimes he flakes a flint all over = *holoclastic*.

Sometimes he flakes a flint only partly = *meroclastic*.

Sometimes the flakes are the same kind of working or practically all the same size = *homoclastic*.

Sometimes these are different = *heteroclastic*.

Sometimes the flakes removed are of immense size = *megistoclastic*.

Sometimes the flakes, although comparatively large, are not so immense = *megaclastic*.

Sometimes the flakes are less than the above, but not small = *mesoclastic*.

Sometimes the flakes are quite small = *mioclastic*.

Sometimes the flakes are quite minute = *microclastic*.

Sometimes they are specially long and narrow = *dolichoclastic*.

Sometimes they are quite short = *brachyclastic*.

When the flint is worked from one side only = *monohedral*.

When the flint is worked on all sides = *holohedral*.

It will not be necessary for me to use the whole of these terms on the present occasion, but it will be in describing some of the other industries I, and some of you, have discovered or studied.

THE REMARKABLE BAKER'S HOLE DEPOSIT.

In 1885, that for many years ardent field worker, Mr. F. G. J. Spurrell, conducted an excursion of the Geologists' Association¹ round his neighbourhood, on which occasion he showed us some remarkable large flake-implements, obtained in the Ebbsfleet valley, and also some larger tools bearing an immense flake-scar, representing the removal of the flake-implement from the parent. These latter, I believe, he regarded as large nuclei; he also showed us large pointed flints with abraded apices, which he considered were used to remove the "flakes"; but as he exhibited these effecting the work, by a coincidence of the striking- and flaking-planes, and as I deeply regret his impaired health prevents him furnishing me with his latest ideas, I am left to conclude that the true nature of these important finds was not realised. In 1892 and many times since in working the Thames valley deposits I recovered some of the ²*monohedral* implements from the spot. In 1907 more extensive workings were undertaken by the Amalgamated Cement Co., and that enthusiastic collector, Mr. James Cross, who was paying weekly visits to the Thames valley pits, was soon on the spot, and with a zeal quite worthy of the immense amount of unique material recovered, he got together the magnificent collection upon which the next part of this paper is for the most based—for the use of which I shall never be able to thank him sufficiently. A local collector, Mr. Waters, was also a contemporary worker, and he kindly gave a number of some of the beautiful implements to the Hastings and St. Leonards Museum, with which I have the honour to be connected, and also placed his collection at my disposal and gave me all the help in his power, for which I thank him, and also the other collectors who have helped me with specimens and facts. But all other collections put together represent only a fraction in point of numbers or types got together by the indefatigable energy of Mr. Cross. There is only one thing which to me is more wonderful than this collection, and that is that in two

¹ "Excursion to Crayford," F. G. J. Spurrell, *Proc. Geol. Assoc.*, vol. ix, pp. 213-216, 1885.

² See above.

years the world failed to realise the importance and meaning of the things he was exhibiting in various parts of the kingdom, and presenting to the various museums. Last summer I wrote the Managing Director of the Combine upon whose property the pit is situated, begging him to have the valuable relics preserved, and I am pleased to say that both he and the next official have since taken an interest in the subject, and have got together an immense collection altogether too large for me to describe separately here. Local legend has it that there was a working here many years ago, into which a drunken man named Baker fell, from which circumstance it is known to some as Baker's Hole. The Company, however, call it the Southfleet chalk pit.¹ There can be no doubt that the deposit at this pit is the most remarkable ever exposed. I hope to deal with the geology of it elsewhere, but it may be necessary to say a few descriptive words.

The heights of Swanscombe are features well known to every traveller in North Kent, rising to an altitude of nearly 300 feet, and the country behind to nearly 800. From these the present surface slopes, at first very steeply, towards the Thames. At the foot of the heights there are masses of strata out of place and the slickensided surfaces. The high angles at which they are pitched, and the contorted condition show they have been moved along an inclined plane. This pit lies in a direct line to the low level of the Thames. There is here a depression which appears to have been scooped out of the solid chalk; it is apparently about 5 or 6 acres in extent, but is now filled to the surface level with this, the most remarkable deposit with which I am acquainted. The structure and nature of the rocks, and the various features of the deposit leave no doubt in my mind that a heavy frozen mass, stodgy at base, passed from the highlands, down to the lowlands, ploughing up the surface materials, brecciating the hard chalk as it passed, mixing it and the surface materials into those fascinating festoonings, with which we are so familiar in glaciated areas, sweeping everything before it; the gigantic tusks and probably carcasses of the elephants and other large Pleistocene mammalia; the contents of the scarcely vacated palæolithic settlements, with everything in living freshness; and the deposits containing relics of forgotten races pell-mell into a contorted inextricable mass some 15 feet thick, which must have contained not only hundreds of thousands, but probably millions of the works of man.

A glance at a thousand or so of these latter shows them to fall into three groups:—

- (a) A perfect industry, the relics of which have long lain in a flint-altering matrix; the alteration commencing in a reticulating manner, gradually stole over the flint, until its surface was in some cases completely altered. These have suffered hard usage, the heavier ones being covered with incipient cones-of-percussion of

¹ Unfortunately it is now closed to the public.

special form, their angles rasped off, and the faces of many striated. For this industry I propose the term "prestwichian."

- (b) Another industry, the relics of which have not moved far: their surfaces are entirely unaltered, the flint is its original black, and the edges of the flakes and tools practically as sharp as on the day they were made; for this industry I propose the term "ebbsfleetian."
- (c) Yet again quite a few implements and flakes deep iron-stained, our old familiar friends, "Miltonstreeters," as they are sometimes called, with which we need not now deal.

THE PRESTWICHIAN INDUSTRY.

The peculiar feature about this industry is the extraordinary preponderance of plano-convex or "flake" tools: it is ideally a ¹*monohedral* industry. The most striking implement of this people is probably the largest and heaviest yet found associated with any stone age culture. It often attains a weight of considerably over 7 lbs., many gave measurements of 20 × 11 × 11 cm. These old folk appear to have selected the heaviest and largest flints procurable and then to have worked them into a more or less flattened heart-shape or discoidal outline—the former predominating (Plates XLV—LI, Figs. 1–14); but instances occur of perfect discs (Fig. 5) with high apical centres on one side; and from their method of working much flatter on the other. They are usually pointed, but there is always a cutting or flaked edge, practically all round. Many of them are worked all over like a huge boucher (or *hâche*) of the cordate pattern. They are never of the elongated pointed oval, although they sometimes are heavy ovoids, with both cutting ends broad (Fig. 11). The flaking employed for the roughing out is of the heaviest (*megistoclastic*) character: flakes 15 to 20 cm. being quite common. They are worked sometimes all over with great care, but always from the edges on both faces; usually all the way round, often obtaining excellent symmetry, when they appear as bouchers (Plate XLVII, Figs. 2–4). More often one face is very much the more worked while the other face, except near the edge which is always worked, is in all conditions down to quite rough—or even with rude knobs which often appear purposely left.

As one looks at a collection of these giants, one cannot help thinking what formidable weapons they would have been. There is another very remarkable feature about these to which I will refer again a little later on. As these implements are so entirely different from any other, I propose a special name for them, and as it is obviously reprehensible to found it upon an assumed use of the implement, of which we certainly know nothing, I feel we cannot do better than follow the precedent of Professor Sollas with the boucher. The most suitable name for these giants appears to me to be that of the giant of prehistoric anthropology.

¹ *Vide* p. 466.

Last year we celebrated two great jubilees: the first that of the epoch-making "Origin of Species," the second its indispensable supplement, viz., the recognition by Prestwich of the discoveries of Boucher de Perthes. As this is an event the importance of which in this country has certainly not received the demonstration it ought to have done, I trust I may be allowed to digress a moment or two, to give some of the facts as I had them on several occasions from the lips of my old master and his esteemed consort the late Lady Prestwich. Up to this time, 1859, the opening of these prehistoric archives and the production of the facts necessary for the establishment of the origin of the anthropoidea, had been scouted, and anathemas and disgrace had been heaped upon the Chevalier's head, from almost every pulpit in Europe.

The years were rolling by, and the great French savant was nearly broken-hearted at his fate; a powerful instrument, for good or evil in the State—shall we say what?—had become possessed of the fact that a certain workman had chipped some of the stones that the unsuspecting enthusiast had accepted amongst others. It was enough; it was "proved" that Boucher de Perthes' had been duped by a fraudulent workman. The Church through the confessional had triumphed! One of the retouched implements is now before me; it is an unquestionably well worked palæolith, but obviously had no point; this the workman attempted to put on, by removing a few more flakes. It is a thing that, not only in those early days, but even to-day might easily deceive one. But Boucher de Perthes' case did not turn on these specimens. In 1859, Dr. Faulkner and his niece (afterwards Lady Prestwich) were passing through France on their way to the Gibraltar caves, and stopping *en route* to see the recent discoveries of bones and flints, immediately wrote off to the enthusiastic young Prestwich to come and see, which he did; and having done so and satisfied himself with the *bonâ fides* of the claim, lost no time in getting thither the leading prehistorians of the day, viz., Sir John Lubbock, Sir Jno. Evans and Professor Rupert Jones, and subsequently many others, and from that time the facts of the greater antiquity of man were accepted, and such strides has the science made, that we can scarcely realize that only last year we celebrated the jubilee of the recognition of the validity of this great branch of science. Professor Sollas has pointed out that we have the precedent of the physicist in the ohm, the watt, the farad, etc., but we have also a precedent of anthropology herself—although in that case a very unhappy one—in classing together a number of different implements, bronze as well as stone, under the name of the people who were supposed to use them—the Celt.¹ I therefore propose that we call this characteristic implement a "prestwich." It is a name to distinguish it from all other objects, and is assuredly far more justifiable than assuming a fanciful use for it, to which it may never have been put, and misnaming it accordingly.

But to revert to the other special feature always present in a prestwich, which

¹ See also *Ancient Stone Implements*, second edition, pp. 55 and 56.

immediately separates it from a giant boucher, of somewhat the same outline, on the one hand, and the huge axes and side choppers on the other. One spot on the edge of the prestwich usually at the base, but on exceedingly rare occasions at the point (Fig. 3*a*), is worked with as rectangular work as possible, so as to serve as a striking face, upon which was administered the blow of a giant, that took off a remarkable perfect plano-convex implement. The idea was evidently to take it off in a plane just above the periphery of the parent-tool. This often resulted in an implement of extraordinary symmetry, more or less oval or pointed, or even lanceolate. Sometimes these attained the size of $17 \times 15 \times 3$ cm. Often they were even more. If we bear in mind the mode of manufacture, we shall realize that these will have one huge flake-face subtending a well-worked flake-face, but that while the flake-face has one immense bulb of percussion, with ever extending conchoidal rings, this flaking plane truncates the original edge working, so that in an ideal specimen, there will not be a single pit-of-percussion on the whole of the flaked-face. Now it is evident, that this detaching blow must have been one, not only of great force, to have split the flint, but to do so evenly in the face of areas of varying resistance, of great skill also. Sometimes it would result in an implement of the most perfect symmetry, with a knife-sharp unbroken edge; presenting now a beautiful rounded oval, and now so pointed as to be almost lanceolate, 20 cm. long, and not more than 11 cm. in its widest part, and not more than 2.5 cm. at its thickest; or even more graceful than this, of perfect bi-symmetry tapering to a point; or still further, assuming on very rare occasions more knife-like forms, with more parallel sides and broader point; but these latter may perhaps have been more the result of accident than intention, caused by a slight in-running of the flaking plane. At other times they would be obovate, and although the cutting edge would extend uniformly all round, yet the broad cutting edge suggests a prophecy of the broad front-cutting edge of later days. To obtain this shape the prestwich was worked to a rectangular striking face at the point (Fig. 3*a*), and instead of the offspring being dislodged from the butt-end, was of course struck off from the point.

We have already pointed out the dexterity required in the striking of this blow: it is evident that several difficulties would beset the operation. In one the blow would not be struck low enough (Fig. 31), and the detached piece would be too small; in another it might be struck too low, and the flaking-plane might then lie below the periphery, with the result that the prestwich itself would be reduced to a mere flake, and the detached portion would be a huge thing, which might be mistaken for a prestwich; a difference in this and the latter, however, would be that, whereas in the prestwich the flake-face is always more or less concave, with a pit-of-percussion, this would have its complementary flake-face more or less convex with a bulb-of-percussion.

Then again, the blow might have been struck in the correct place, but owing to its not being of sufficient force, and not quite properly directed, the flaking-plane

might "resolve," *i.e.*, after starting, and, continuing for a number of centimetres in a right direction, would suddenly resolve, and turn round, cross the peripheral plane, and rush off for the other face of the prestwich; making it very much like the previous case, when the blow was struck too low, only that, as is invariably the rule the (curved) flake-face of the prestwich, would be more or less concave, and with a pit-of-percussion, the converse of the other implement.

Now as these ¹*monohedral* tools are as characteristic as the prestwich, and as one was born of the other, I think we may well name them after one of the greatest anthropologists of which our science has been able to boast, *viz.*, the late Sir John Evans. I therefore propose for this characteristic implement the name of an "evans."

The "evans," then, differs from a plano-convex flake-implement, regardless of size, in that the working of the convex face has been truncated by the flake-face, which latter has cut away the pits-of-percussion. We shall again refer more in detail to these beautiful implements, but the foregoing features must be borne in mind, in order that we do not confound them with the large ridge-back flakes or blades, produced in the ordinary way, which may sometimes resemble them in peripheral outline. Naturally, the edge of the evans was likely to become blunted if used, and then successive secondary, tertiary or other reworkings would be added. But it is generally easy to recognize their subsequent workings if they be present: but the significant feature about these is, that they scarcely ever do show signs of use; they appear to have been made with an immense amount of trouble, and then preserved, and the kind of edge they present is by no means the right one, to effect the work which so large a tool might be expected to perform.

As, however, we look at a collection of prestwiches beside other very similar groups of equally massive tools, some of which are heavy bouchers, often of practically identical initial outline, with piercing points, cutting edges, and heavy butts; and the other groups of almost identical outlines, some with a rather more axe-like aspect, others a perfect broad cutting-edge axe; and note the fact that both these latter groups are worked in the same general manner, while the prestwich is worked so differently, we are tempted to seek an origin for it. When an evans has been removed from a prestwich, the operation has not in any way altered its efficacy as a useable implement. May there not be something more in this? May it not represent an unknown ceremony, a bargain, a covenant, similar to a tally? When a "tally" is broken or cut, conditions of the agreement can be claimed, by showing that the retained portion "tallies" with the other. May not these prestwiches have been taken by the chiefs, or even the ordinary individuals in cases of agreements, and the evans split off and given to the other party to the agreement, in which case either party could claim "rights," if the evans and prestwich tallied. It might also have been used by the men of the time, in taking a wife, to whom they might have presented the evans, while they retained the

¹ *Vide*, p. 466.

prestwich, and after long years of separation consequent upon the circumstances of life, in the possibly polygamous days, might have recognized a wife if her evans tallied. It might also have served as a sign of membership of cult or clan; but still more likely its real meaning yet awaits discovery.

DESCRIPTION OF THE PRESTWICH.

In order to get a better idea of the real nature of the prestwich, a further detailed description may be permissible—Plates XLV and XLVI show the two sides of a good typical prestwich. The former shows it to have been worked all over (*holoclastic*), and that with some amount of pains and care. The surface is very much altered and glossy, and is now of a greenish-grey colour, and since it was caught up by this deposit, it has been the victim of thermal fissure, and is now in numerous pieces, while others are nearly separated, one piece from the centre of the reverse side has been lost, and four or five from the obverse. No one can look at this without realizing that it is really a well-made implement, and that its centre would certainly not have been worked off so well (or even at all) had not the implement been intended for use—Plates XLV—XLVII emphasize this point. In this and every other prestwich the edge-working is alternate, producing remarkably wavy edges, all the way round. I am tempted to call especial attention to the finish of the reverse side. Had some of the examples been the only ones with which one had met, one might have concluded that the working of the second, or reverse face, was necessary to reduce a nucleus into such a form that an evans with a good cutting-edge and symmetrical outline might result; but the *'holoclastic'* state of the specimens such as these, quite preclude such a possibility. Nor could the removal of the evans have been to reduce the general thickness of the implement, firstly, from the fact that many prestwiches, even before the removal of the evans, must have been quite thin. Plate XLVII, Fig. 2, is not more than 3 cm. in thickness, and probably was never much more than four; secondly, when we remember that it was always, without a single exception, the low worked-face that was removed, we can be absolutely certain on the point. Moreover, there is often a great care displayed on the thickening of the base (Plate XLVII, Figs. 3 and 4). The discoids (Plate XLVII, Fig. 5) served as excellent hand choppers, and the removal of the apical flakes clearly shows that the tool was intended for use.

Turning to the obverse or evans side of the prestwich, Plate XLVIII, Figs. 4a and 5a, are the best normal examples; Fig. 5a might with better effect have been struck a little lower, and a larger evans produced, but the blow was a very smart clean one. Fig. 4a was in perfect position but hardly sufficiently strong; Fig. 2a has since had a flake or two removed from the left bottom corner. Fig. 3a is an example of one struck from the point; unfortunately it was by no means a perfect blow, although the flaking is superb. It was struck nearly on the periphery, and further a little oblique. The workman's pick has since carried away the original

¹ *Vide* p. 466.

pit-of-percussion. Figs. 2a-5a all show the *megistoclastic*¹ scar indicative of the removal of an evans. Although I have carefully examined a very large number of prestwiches, I cannot say that their battered-about condition would lead me to think they were *in situ* in the Ebbsfleet cache, and although hundreds of evanses nearly fit evans-scars on prestwiches, up to the present time I have never found two parts of the original, and indeed I shall be greatly surprised, from the evidence I have, if we ever do so.

I have, however, made a plaster cast to show the shape of a lost evans (Plate L, Fig. 13). Plate XLIX, Figs. 6-9, shows the obverses of a further series of prestwiches with the *megistoclastic* evans-scars, from exceptionally thin specimens (Fig. 6) to very thick ones (Fig. 9), which is especially so. They also show the unmistakable implemental outline of the prestwiches. Plate L, Fig. 10, shows an example of a prestwich of the large, circular-pointed axe form. It is worked to an excellent cutting edge for the greater part of the way round it. A curious feature about this is, that the evans detaching blow was struck with a stone with a second projection upon it, which brought off a flake that started at two points. Such a result might have been obtained by two distinct blows; but the ultimate coincidence of the conchoidal waves, the interference at the initial phases, and the resultant *écaillures* on the overlapping areas, point to a case of plane-capture, so that it is fairly certain that this is the result of one blow with a stone, upon which there were two projections. Fig. 11 shows the rounded end ovoid axe form prestwich. It is more of the hammer-axe type, being very thick. The front cutting-edge is quite broad, and the working at the opposite edge is at a very high angle; but its evans was a specially fine one. If any further evidence were required to give absolute proof of the implemental nature of the prestwich, this Plate L would assuredly afford it. Fig. 12 is a fine example of the broad irregular obovate form. It is worked with a wavy edge all round, and shows a splendidly-struck evans-scar. A reference to the included scale is requested for the realization of the immense size often reached by the prestwich, although these are by no means the heaviest specimens found. Fig. 13 shows a plaster cast of a restored evans struck from this implement. Fig. 14 is an example of a beautiful well-worked heavy, boucher-form prestwich.

DESCRIPTION OF THE EVANS.

In order to enable one to distinguish an evans from an ordinary worked flake, some further observations upon this remarkable implement may be justifiable. It must be remembered that the flaking on the flake-face is really effected around the periphery of the prestwich, of which it formed a part; so that if the detaching blow were administered correctly the flaking plane maintained the desired direction, and all the pits-of-percussion were truncated. Plate LII shows a series of good typical examples; the accompanying scale indicates their sizes. Fig. 15 is a beautiful flat example not more than 16 mm. thick. It was a well-

¹ Vide p. 465.

struck evans, and consequently presents a good symmetrical outline (with a slightly twisted point). It will be seen that every pit-of-percussion, except the one above the point-of-percussion, of the detaching blow has been cut away, and that it therefore received no finishing touches after it had been removed from the prestwich. Fig. 16 is equally thin; it is obovate in outline, and beautifully symmetrical. Every pit-of-percussion is truncated. The material of Fig. 17 was rather more heterogeneous, some parts being far more brittle and some more tough; but for all that it is a very fine implement of great symmetry, every pit-of-percussion being truncated, and when perfect came to a point. Fig. 18 is a beautiful, thin, clean evans, with rather mixed working, but for the most part very bold, the original pits-of-percussion lying well on the prestwich. Plate LIII shows a good series of evanses (Figs. 19–27), and are of good typical medium sizes, exhibiting the various outlines assumed by this interesting implement, from pointed elongated oval to almost square. It also shows the varying quality of the work found upon them, from ¹*homo-megaclastic* to fairly fine ²*heteroclastic*. Fig. 28 is a very beautiful typical evans of the lanceolate type. It is 19 × 15·5 cm., and not more than 2·5 cm. thick, thinning very regularly from the butt to the point. The flint is very much altered, and fairly well sand polished, or what is called patinated. It varies in colour from buff to greenish-brown. It is shown larger size to give a better idea of the dimensions attained by these implements, although this is but very little larger than Figs. 16, 17, 18. Plate LV, Figs. 29–32, shows a series of more lanceolate forms. When these were required the working of the prestwich was more from the ends in order to obtain greater parallelism. Fig. 29 closely approaches the lanceolate flake implements; Fig. 30 is more typical working. This latter is very much altered, and like many others, very hard worn and striated. Fig. 31 is a very similar evans, almost equally altered, and like the other showing signs of very hard wear and secondary chipping at the edges. Fig. 32 is specially interesting, in that two minor projections on the hammer-stone brought off a concurrent composite flake from an otherwise specially fine evans.

THE *Boucher* OR *Hâche*.

The classic implement in this important cache is almost absent. For a long time Mr. Cross's collection did not contain one. Amongst the next five hundred various specimens they numbered about three per cent., and these belonged to the three groups: 1, the prestwichian; 2, the ebbsfleetian; 3, other Thames valley cultures.

Plates LVI and LVII give a good idea of the group, which probably belong to the prestwichian industry. They are all in the same mineral condition, and have been subject to the same rough treatment, and until one turns many of them over to look at the other side one cannot tell at a glance whether they are rather

¹ *Vide* pp. 465 and 466.

² *Vide* p. 465.

small prestwiches or bouchers. The working is exactly the same, *megistoclastic* and *megaclastic*, and there is a general absence of the mastery of the flaking plane, which for want of a better word I call *¹celoclastic*; where the worker appears to have had but little directing influence over the flaking plane, and the flakes removed leave concavities with high separating ridges, and where the blows are hardly ever administered with the correct degree of force, so that a large proportion of the planes resolve, giving rise to a hackly surface. It will be noticed they are mostly irregularly cordate in outline, and it is difficult to say which part of the implement was operative. Scarcely any of the points would pierce, or the edges cut, and they are sometimes as thick as wide. Four (Figs. 33–36) are much better than the rest, more ovoid, and of these Figs. 33 and 34 are the best; but although they are much better worked they are by no means fine. Fig. 33 shows *¹microclastic* fairly *¹holoclastic* work, and from the way the flaking plane bends at the will of the operator may be called *¹clinoclastic*, and was probably the result of an advance outburst of genius, which became typical and much improved in the succeeding ebbsfleetian stage, and attained its highest pitch in some parts towards the close of the neolithic period, to which I hope to refer in the future. The strength of the blows, however, was not well regulated, as many of the flaking-planes resolve, even in the best specimens. The six largest specimens are exceedingly rough. Fig. 34 belongs to the *²monohedral* industry, but is beautifully ridgeless, in advance of any other specimen I have seen. It is quite possible that Figs. 33 and 34 really do not belong to this industry, although the mineral condition would point to their being so.

THE HEAVY AXES.

The heavy axes often approach the prestwiches in outline excepting always the method of working, and the evans-scar. They frequently attain a weight of 3 or 4 lbs. and are simply a big flattened point, worked from a transversely flattened butt say 14 × 14 cm., with a thickness of 6 or 7 cm. at the somewhat straight butt. In the pointed group (Fig. 47), the *²megistoclastic* roughing out is usually entirely, or largely, from the butt, a few finishing touches being put on when necessary: Fig. 45 is a good example of a round-pointed form; it is sphenoidal from its very broad base to the front; Fig. 46 is more ovoid, with still straighter cutting edge. In others the fronts broaden out leading up to the next group.

THE TRIANGULAR AXES.

This group is very interesting, the shorter ones, such as Fig. 43, calling strongly to mind giant triangular Danish Kitchen Midden axes. This, it will be noticed is very, bold *megistoclastic* work, the straight cutting edge being the result of secondary work. They elongate out attaining such outlines as Fig. 44.

¹ Vide p. 465.

² Vide p. 466.

THE HEAVY RUDE SIDE CHOPPERS.

Here we are brought into touch with the well-known form of hand or side-choppers, usually regarded as typical mousterian. They are usually somewhat crescentic with a more or less straight dorsal chord, the curved side being the cutting edge, and the back broadening out horizontally, evidently for grasping by the hand. But the specimens recovered from Baker's Hole are generally more massive than those of any collection I have seen from any French mousterian deposit, weighing in the neighbourhood of two pounds: Fig. 48 is a good typical example. They are of varying sizes down to 10×8 cm., and although of different outlines have always a more or less straight thickened back, opposite a cutting edge.

THE MONOHEDRAL WORKING.

In classifying a collection of many hundred evanses and flake implements from this remarkable deposit, the former stand out very distinctly, although in outline they sometimes approach each other. We get hundreds of big spalls and nuclei from off which flakes sometimes 25×20 cm. have been dislodged, but they bear no relation to the prestwiches, off which evanses have been worked. Naturally, however, advantages were taken of what we may call nuclear ridges either adventitious or purposely worked.¹

Plate LVII shows a series of pretty little monohedral boucher-form tools, in which the flake-face is sometimes the result of chipping before removal from the nucleus, while there are many hundreds of nuclei, that show scars of the removal of such flakes; none show the characteristic holohedral working, nor even all-round working peculiar to the prestwich. It is therefore certain that the prestwich and evans, seem a peculiar and unique form of working which may be taken to represent a given industry or culture. Plate LIX shows a series of pointed ²*dolichoclastic* and *monohedral* flake tools produced by taking advantage of either a chance ridge, or purposefully worked one, or series of ridges. They occur in every size from say 6 or 8 cm. to say 15 or 18 cm., they usually have ridge backs, but occasionally, if the ridge were too high, the upper angle flake would be removed giving rise to the concave-ridge, wholly or in part: such tools would, of course, form excellent spear-heads.

THE BEAUTIFUL DOLICHOCLASTIC BLADES AND FLAKE KNIVES.

The knives are at once one of the most numerous and beautiful groups, usually parallel-sided, from pretty little tools not more than 6×2 cm. up to parallel-sided beauties 17×6 cm. or even much larger; now with single ridged backs, and now with concave broad flat backs, tools born perfect and complete at the detaching blow; or now again secondarily worked, or hard used, or still further worked either to a convex cutting edge or shaped before they were detached.

¹ *Natural Science*, Plate VI, 571-93 (42-25).

² *Vide* p. 466.

This characteristic *dolichoclastic* master-flaking was transmitted to the Ebbsfleetians, who, if possible, even exceeded their progenitors. Plates LX-LXII show series of these interesting *dolichoclastic* implements. The general facies is altogether different from that of a collection of ordinary polyhedral palæolithic flakes from the generality of River Drift sections, which are more often comparatively *brachyclastic*, and we feel ourselves in the face of a race of men who manipulated flint in a manner essentially their own. This fact becomes specially emphasized when comparing them with a set of deeply iron-stained flakes, now found in this remarkable deposit, but which obviously belong to another age and race. Plate LX shows a series of small knives, and gives a good idea of the general facies of the group. There are others still smaller; and there is a corresponding series of points, those about four or five times as long as broad being specially graceful, calling to mind the beautiful French cave things. All these show signs of wear or secondary work. Plate LXI introduces us to a group of very much stouter knives, all of which show signs of hard use and sometimes of repeated edge trimming. It would appear as if, in use, the small flakes were often removed from both faces. Plate LXII introduces us to an even more beautiful group; Figs. 97-102 are examples of very fine parallel dorsal concave-ridged-back flaking, sometimes with re-worked edges, but always showing signs of use. The pointed group (Figs. 105-107) are examples of very fine tools, and might have served either as knives or spear heads, their all-round used conditions suggest they were used as knives; but in all probability the same tool often did more than double duty.

THE LANCEOLATE GROUP.

In practice one would find that for every detaching flaking-plane that maintained parallelism with the ridge, and so produced straight-cutting edges, scores would run out after a while, rising and approaching the dorsal ridge, and thus put on a point. There is, however, a law in flint fracture dependent upon the molecular arrangement, if I might use that term to distinguish it from homogeneity, in virtue of which all blows administered with the correct force and bearing giving relations to definite planes in the flint, well act along a curve as though it were a straight plane; we can therefore often see all the faces describing similar curves, and yet retain a parallelism of the faces, or a bi-symmetrical outline when lanceolate. Indeed, generally speaking, the antecedent flaking planes, which now form the ridge-face, and the ultimate flaking plane will be under the same determining conditions, the inequalities in the flint, in the one, being represented in the other, and this sometimes when one is a natural fissure and the other an artificial fracture. In the group under consideration advantage is taken of a nucular ridge upon a flint purposely worked upon it, when a slight angulation of the flaking plane produces a more or less bi-symmetrical lanceolate blade. These lanceolate blades, or spear- or javelin-heads are by far the most numerous tools, occurring by the thousands, good average sizes being 10×5 cm.

to, say, 15×7 cm., many being very much larger. The bilateral symmetry obtained with these things is often surprising. Frequently they widen out rather more than the proportions quoted, and often show signs of pointing by secondary working, and less frequently they are re-worked for the greater part of their entire length. But not only are these blades worked from an angle-edge formed by the meeting of two adjacent antecedent flaking planes, but any suitable union of faces, so that we get the same outline with multiple-ridge backs. Immense quantities of these show secondary worked and hard used edges, and the size of the working shows that many of them had reached the critical angle, and had been re-edged again and again. The enormous size of some of these is also a special feature, one before us measuring 20×9 cm. and as it is broken it must have been still longer. Figs. 104–107 give a good idea of the lanceolate group, remembering that they descend down to, say 6×2 cm.

THE CLEARERS.

The clearers produced in this *dolichoclastic* parallel flaking are also a special feature reaching a length of 20 cm.; even first and second flakes attain a length of 15 or 18 cm. Their quaint outlines would suggest all sorts of uses to an imaginative mind, but to one who has spent his days and years in practical flint-working, they would be regarded as "clearers," that is, huge chips split off in the process of bringing a parent flint into a shape desired for working.

HOLLOW SCRAPERS.

Very many blades and flakes bore evidence of continued re-chipping and using; one of the most plentiful tools was the hollow scraper. These old fellows, like other palæolithics, knew only present needs, and when a hollow scraper was wanted, the first implement to hand was sacrificed for it. The hollows were usually from, say, 1 to 8 cm. There were often two or three in one flint, and often two adjoining were worked from opposite faces.

DRILLS.

Those curious so-called drills, or bone splitters, which are fairly common in plateau flints, and which maintained their hold throughout the stone ages, formed by a long extending point between two hollowed out bays, were also fairly common, some showing reversed working.

SPATULATE SCRAPERS.

I saw no sign of a spatulate scraper, although there were hundreds of blades, which, with a little end trimming, would soon have been made into them; nor any of any other type, or anything approaching one, not even in the ebbfleetian industry, which from the fineness of some of the side choppers our French friends would call moustesian or solutrian, which clearly emphasizes my contention

that the foreign systems of classification, however suitable they may be to the conditions upon which they are founded, are quite inapplicable in this country where those conditions do not obtain.

THE EBBSFLEETIAN INDUSTRY.

But in addition to the prestonian industry in this remarkable cache there is another, which, while it may be regarded as the lineal descendant of it, in that it follows in its *monohedral dolichoclastic* line, nevertheless leaves the prestonian, the evans, etc., behind, and introduces us to *clinoclastic* work of a very high order. Moreover, as previously pointed out, the flint is unchanged, with only here and there a single exception, and the edges of the implements are as fresh and sharp as if only worked yesterday. Plate LXIII shows examples of their beautiful work. Unfortunately, Fig. 110 has lost its point, but when perfect must have been a glorious long oval boucher, and must have been 30×12 cm.

It is really a beautiful piece of *clinoclastic* work, and although it has been in a highly absorbent matrix (probably in a drainage line from the surface), is nevertheless sharp and fresh. Figs. 108-109 are excellent examples of shorter oval bouchers; the former is excellent flaking and symmetry, and as sharp as the work of a forger, the latter is heavier. Fig. 111 is a most beautiful implement, calling to mind the well-known mousterian specimens, and of a quality of work which finds no approach in the prestonian industry. I fear I cannot go into so minute a description of all the products of this industry on this occasion. I will therefore content myself with one beautiful group, the *dolichoclastic*, which embraces both knives and lanceolate heads of great elegance. Plate LXIV gives an idea of these; they are all perfectly unaltered, and as sharp and fresh as the day they were made, bearing on their faces the likeness of their forefathers of prestonian days, but at the same time just as different in many ways; showing a command of the flaking plane, which had not been acquired in the earlier days. Many of them are reworked into side-scrapers—quite different from anything prestonian, the secondary work upon some of them being of great perfection. Both groups are equally represented, but there is also shown a very much greater skill in the selection of the flint; personally I should think this flint was mined and worked before it had lost its "quarry water," and thus with the superior lithoclastic art of ebbsfleetian days resulted in really beautiful specimens.

RELICS OF OTHER INDUSTRIES.

Amongst the relics of this cache there are some 3 or 4 per cent. of old familiar faces, polygonal comparatively *brachyclastic*, and dark and red-brown iron stained flints, which obviously belong to neither of these industries, but which occur by the hundreds in other Thames valley deposits. When there is evidence of any iron staining in the prestonian things, the colour has been almost entirely

withdrawn, and the specimens are exceedingly hard water-worn, but in marked additions to this have been pushed along until the edges are very often entirely ground off, and sometimes the faces striated, whilst upon their surfaces are exceedingly large incipient bulbs-of-percussion of a peculiar character, the largest I have seen anywhere, even at the feet of chalk-cliffs shores. The nearest I have seen them approached is by certain flints in the glacial deposits of East Anglia, and from the glaciers of Europe, but they are quite unlike those one sees upon modern beach specimens.

THE TWO GREAT INDUSTRIES.

Omitting the familiar iron-stained fresh river-drift specimens, I think we may fairly claim that we have in this remarkable deposit an admixture of two well-marked industries, for which I propose the names of the *prestwichian* and the *ebbsfleetian*.

The *prestwichian* characterised by:—

1. The large number of the immense implement we call the *prestwich*.
2. The offspring of the latter the *evans*.
3. The general *monohedral* industry.
4. The paucity of the boucher and these almost invariably of rude large *celoclastic* work.
5. The huge 7-lb. pointed single and double broad cutting-edge axes.
6. The massive triangular axes.
7. The heavy *megistoclastic* side choppers.
8. The altered often very hard worn battered condition of the implements.

The *ebbsfleetian* characterised by:—

1. The apparent absence of the *prestwich*.
2. The apparent absence of the *evans*.
3. The general, but more highly developed *monohedral* industry.
4. The greater number of bouchers, and these often much smaller, flatter, more oval, very much better *heteroclastic* work, which is usually of fine, and sometimes of superlative quality.
5. The total absence of broad axes.
6. The total absence of triangular axes.
7. The *megistoclastic* side-choppers replaced by *megaclastic heteroclastic* specimens, of a very much more *clinoclastic* character.
8. The absolutely fresh unworn unaltered condition of the implements.

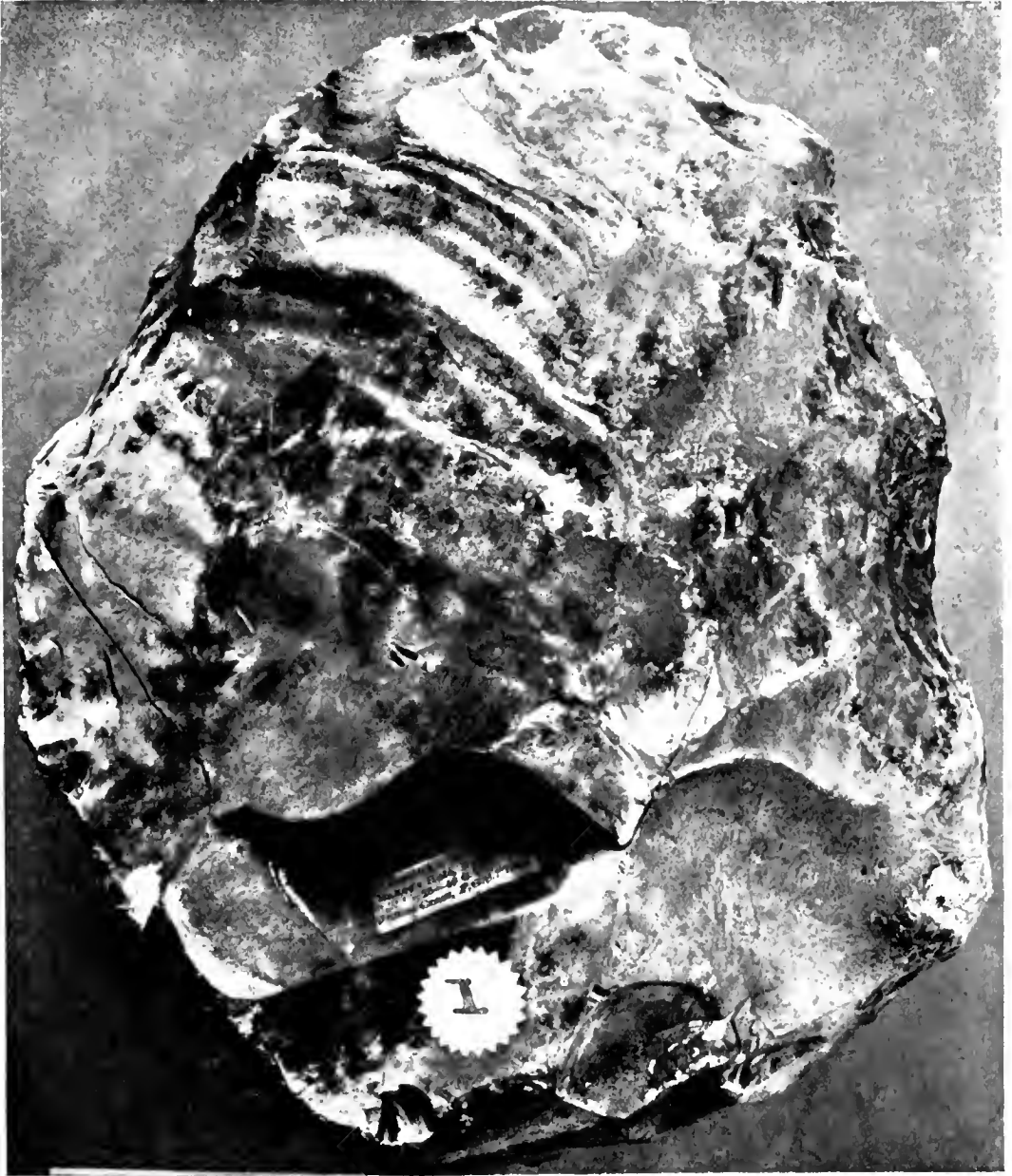


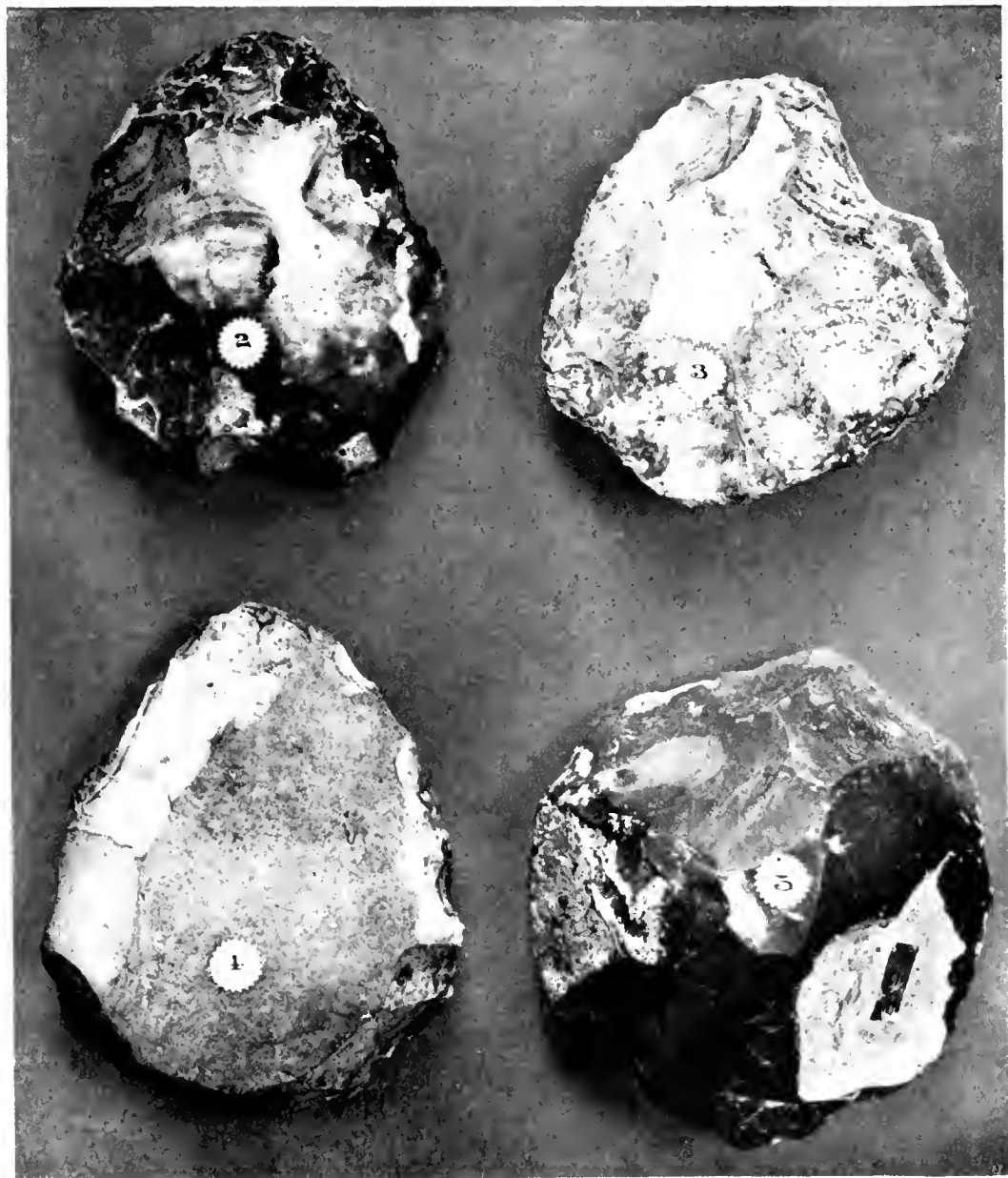
FIG. 1.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



FIG. 1A.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



FIGS. 2-5.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



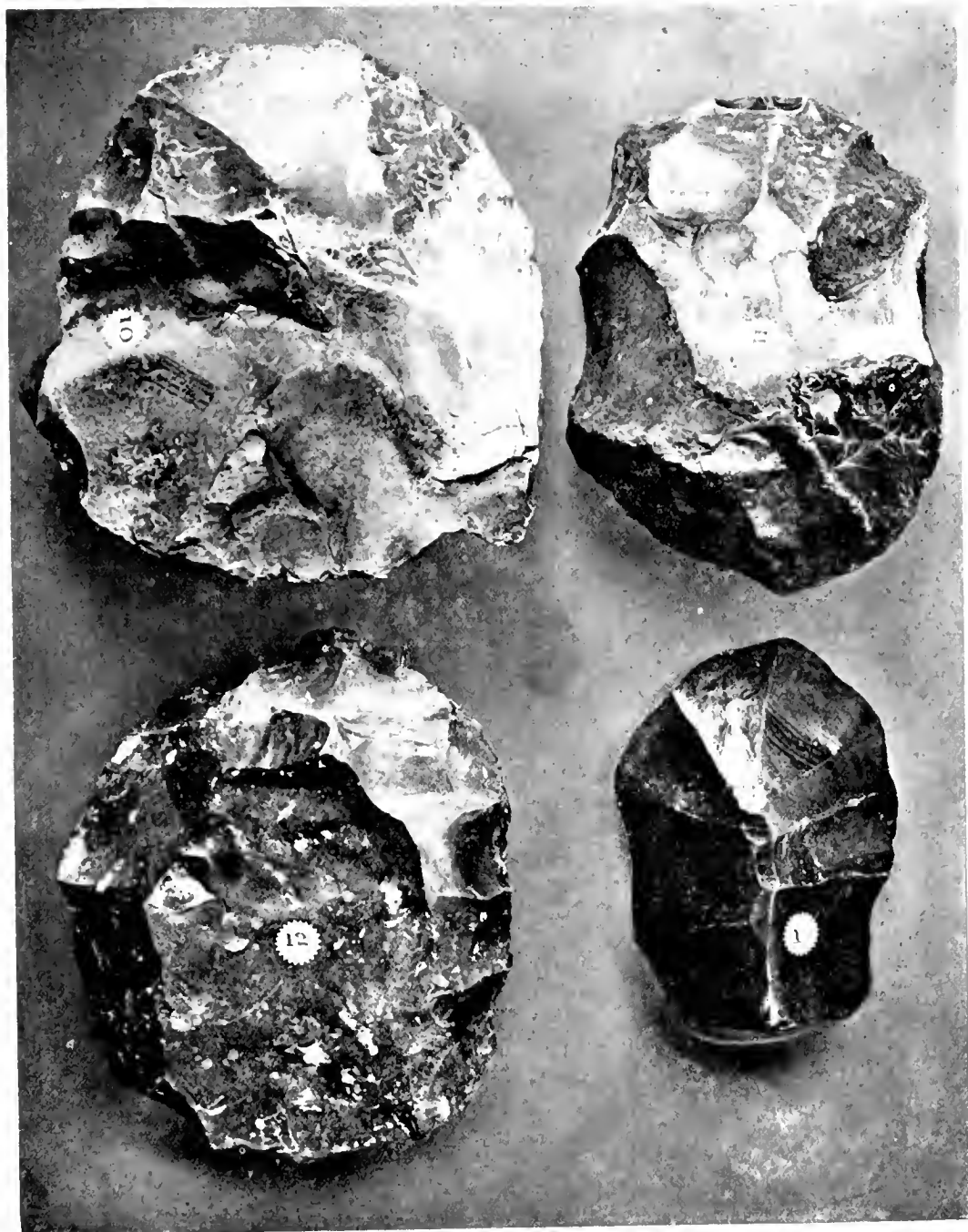
FIGS. 2A-5A.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



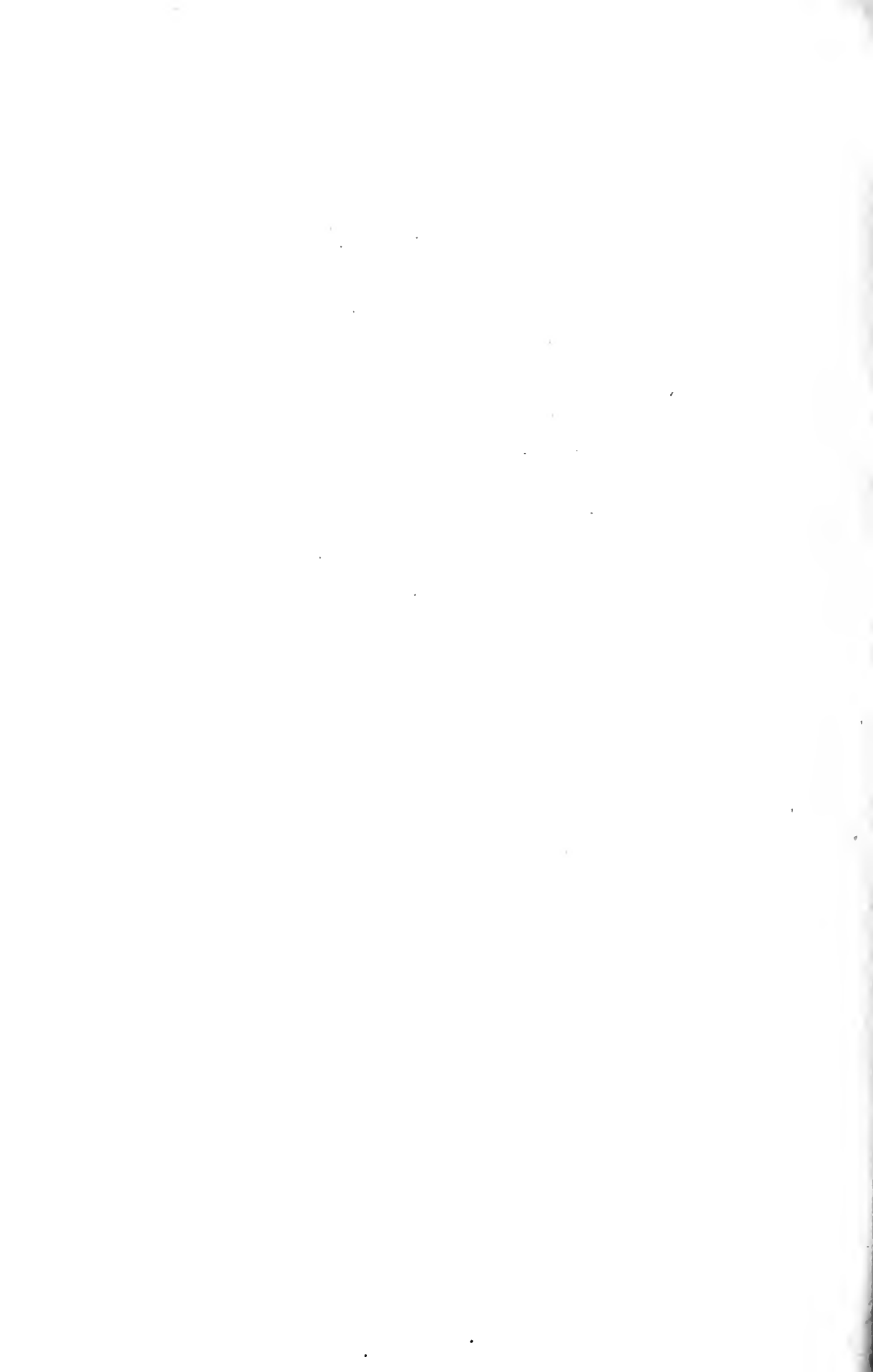
FIGS. 6-9.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



FIGS. 10-13.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



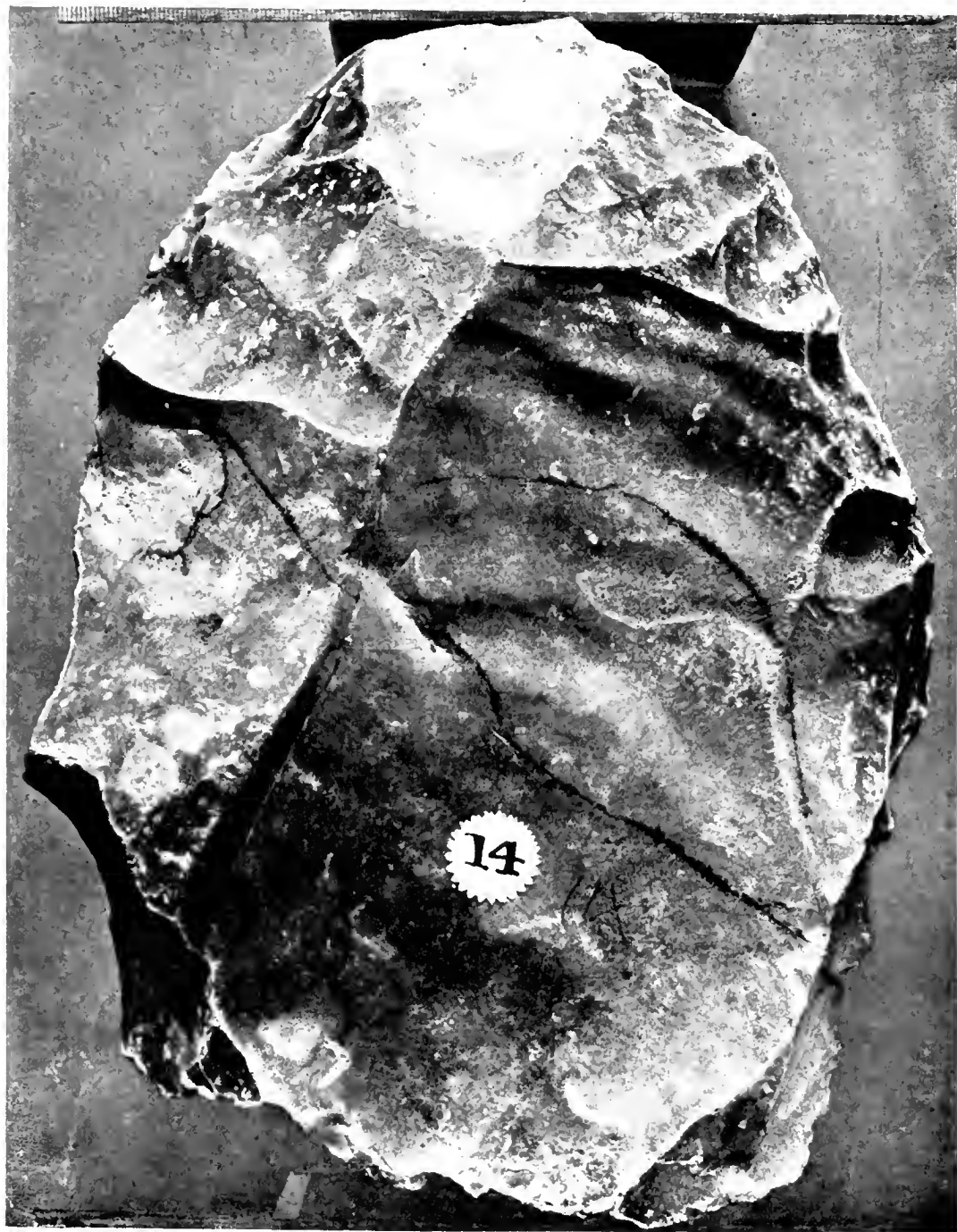
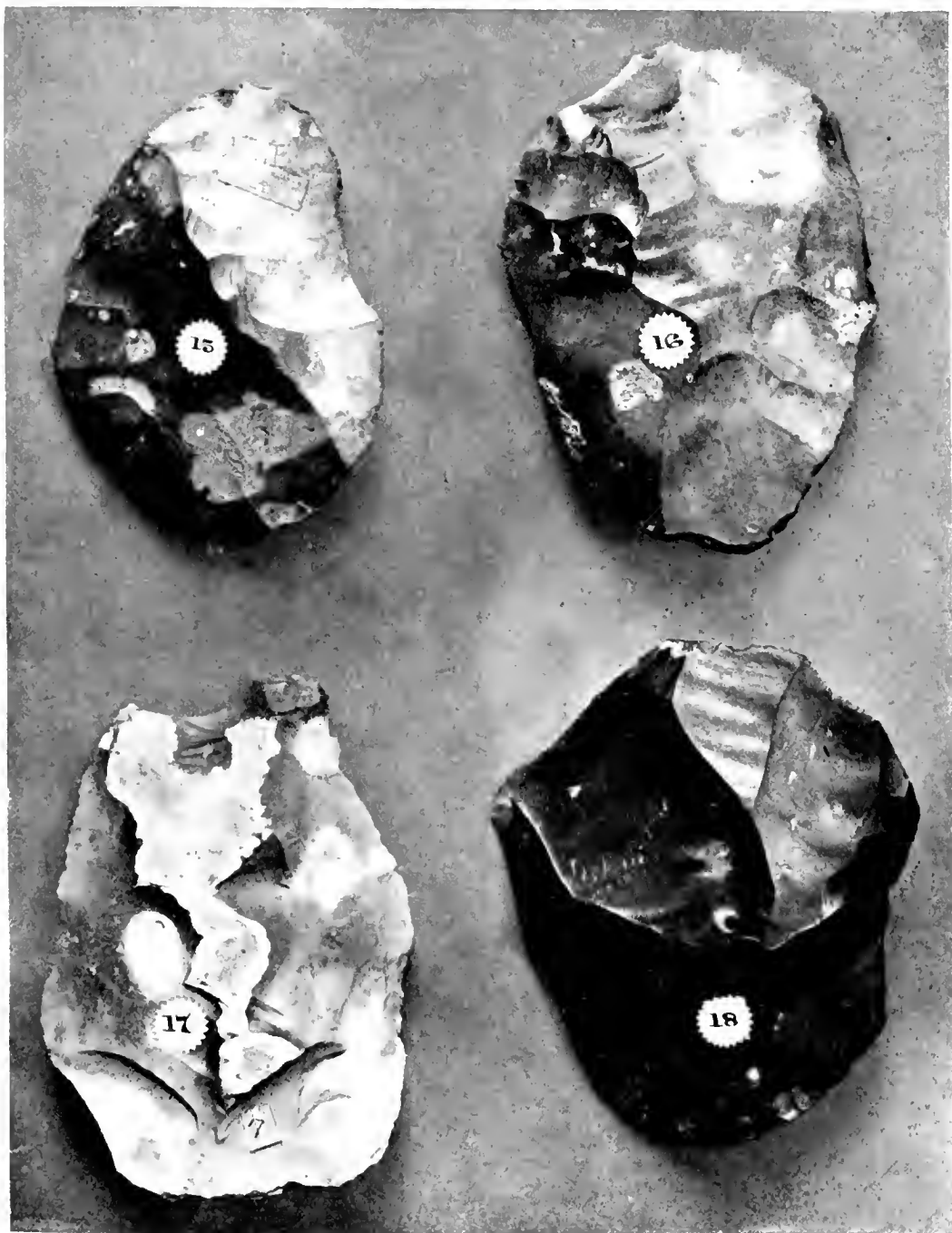


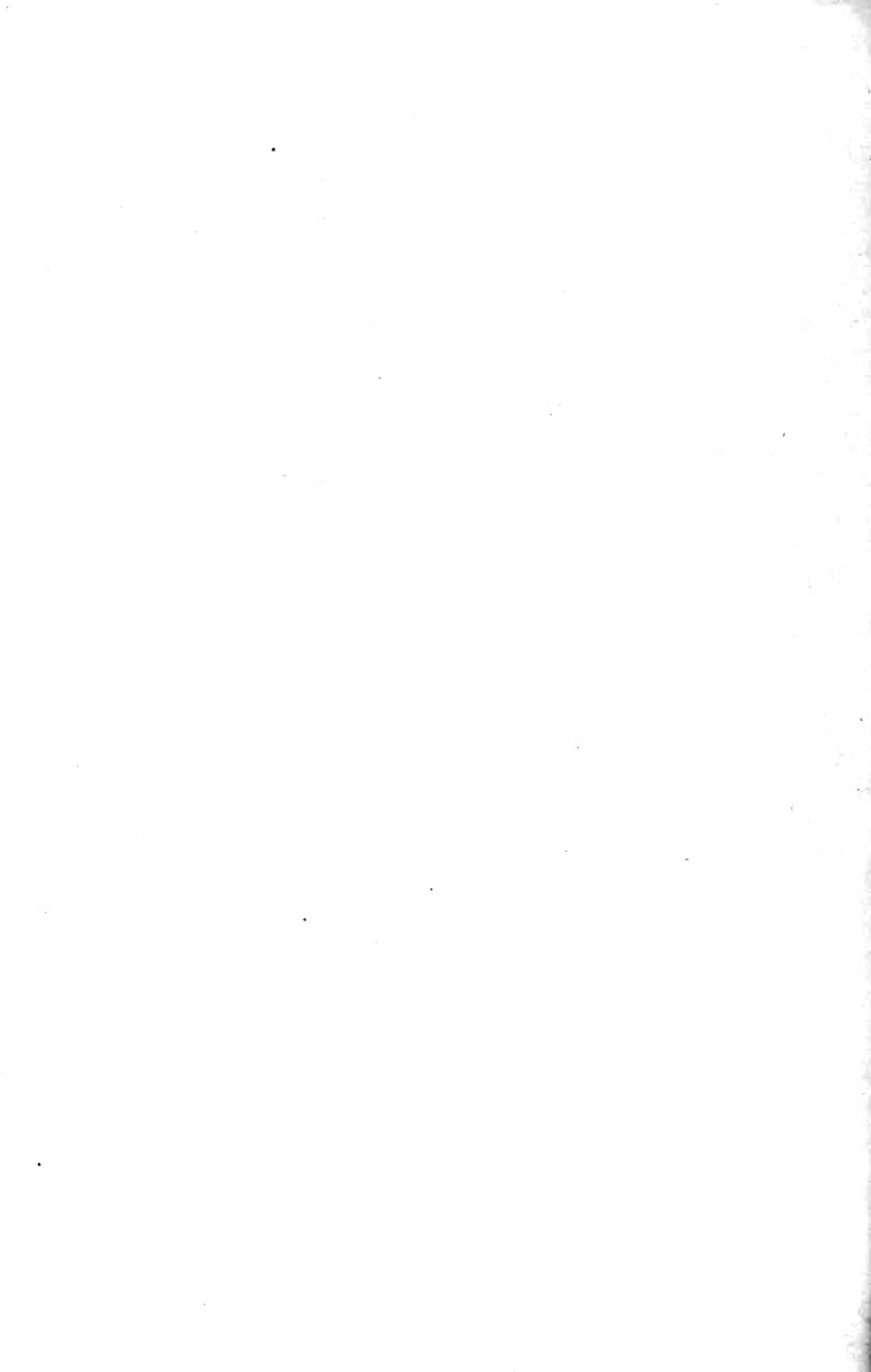
FIG. 14.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



FIGS. 15-18.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.





FIGS. 19-27.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.

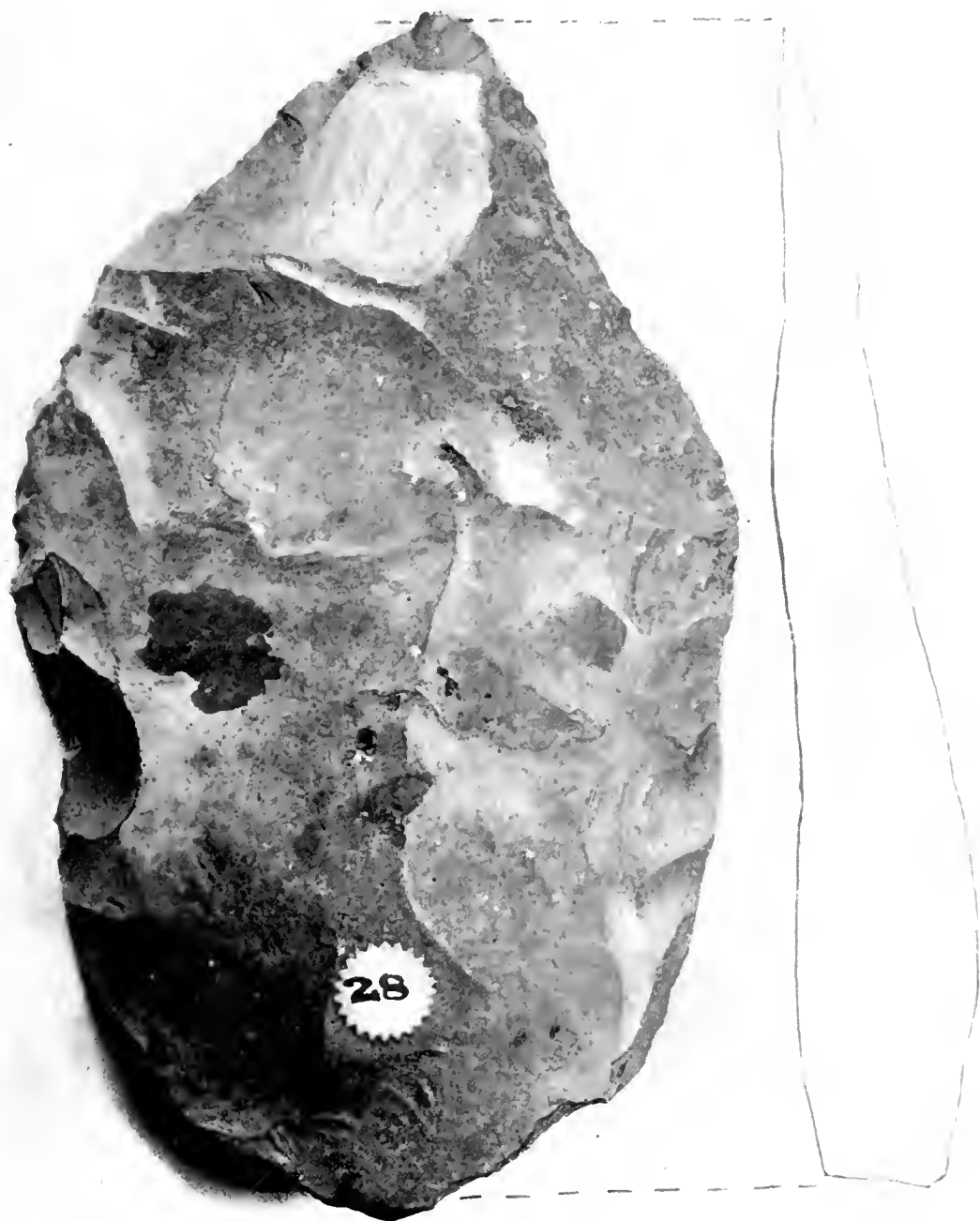
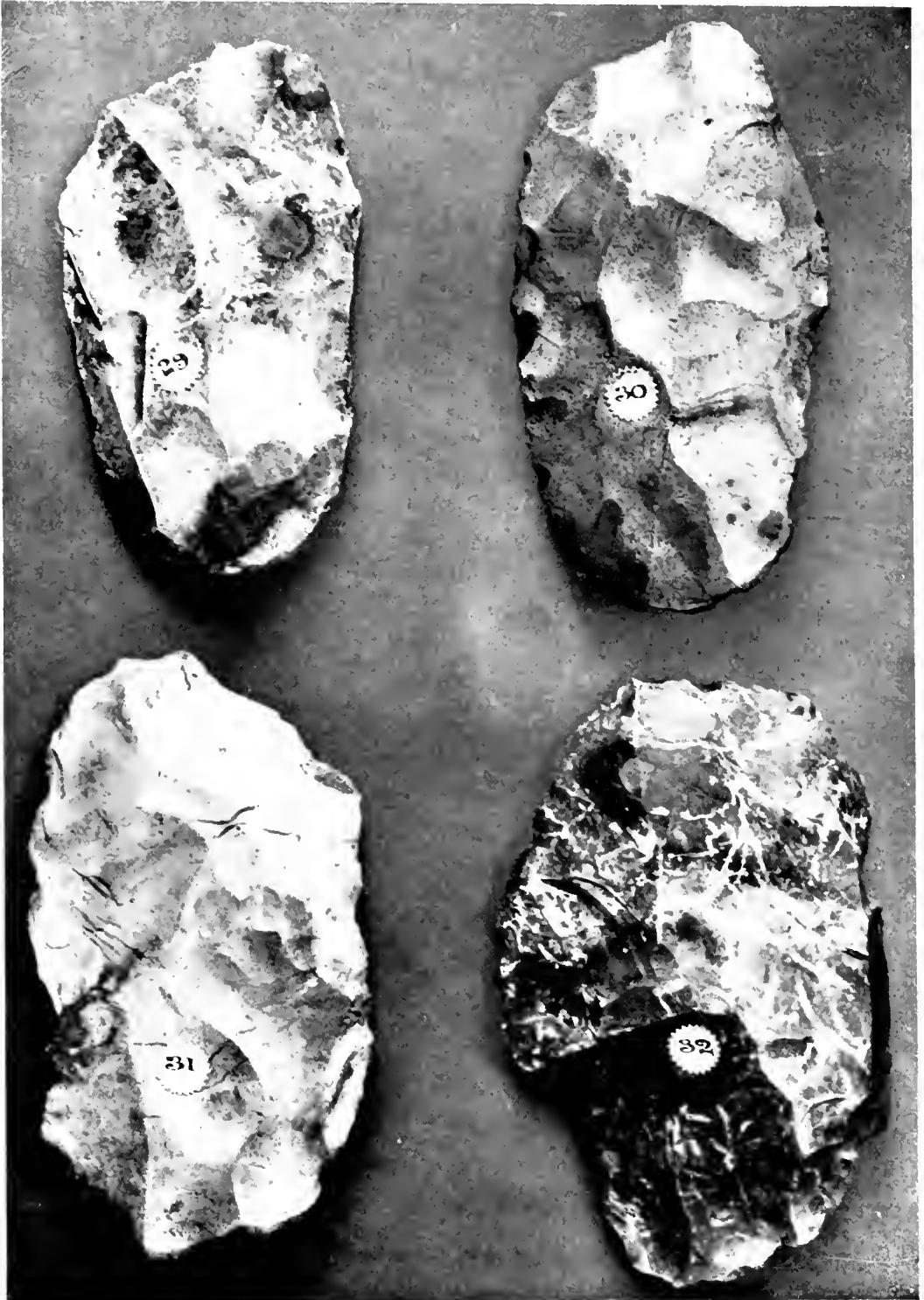


FIG. 28.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.





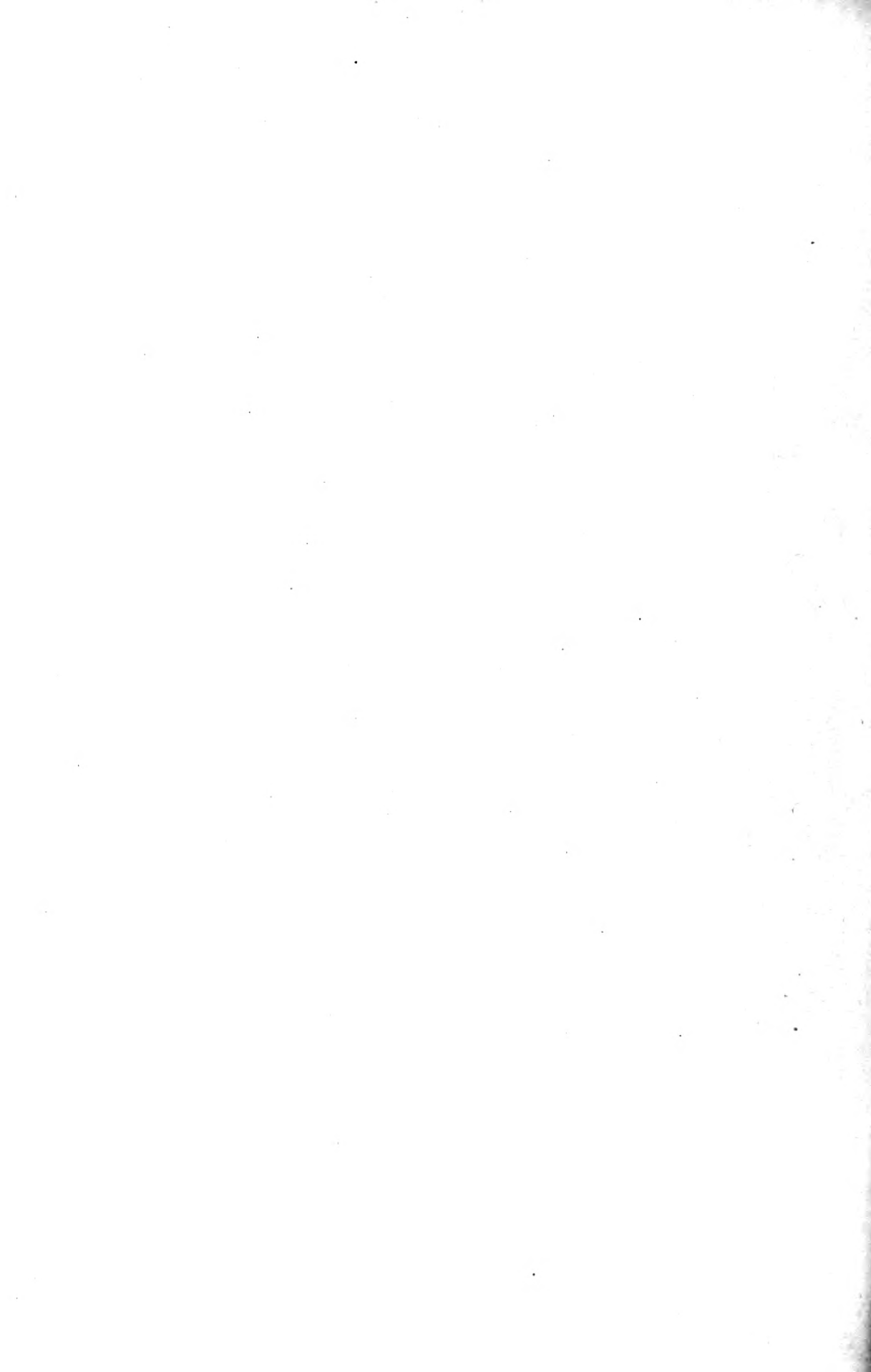
FIGS. 29-32.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



FIGS. 33-42.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.





FIGS. 49-59.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



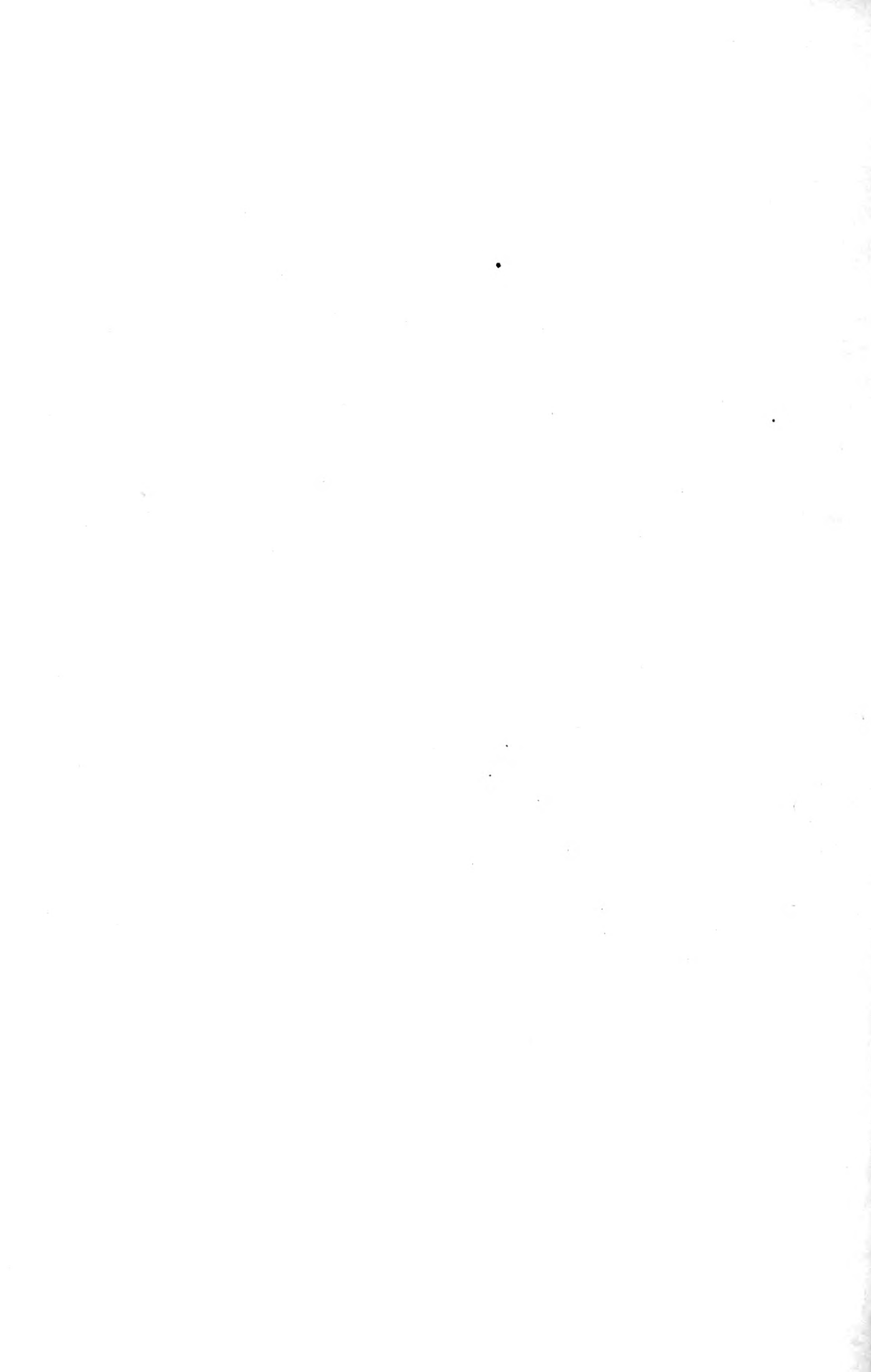
FIGS. 43-48.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.





CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



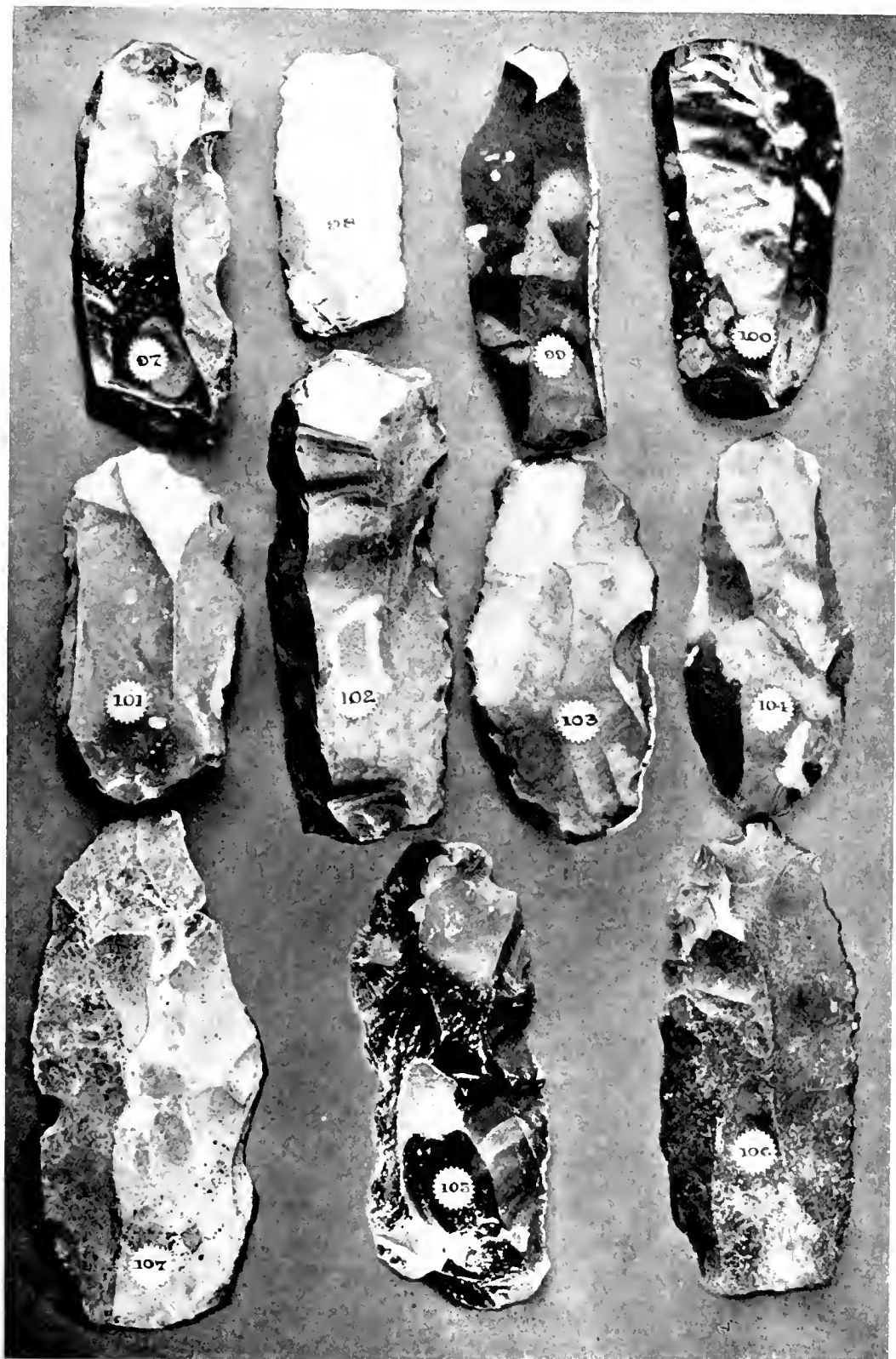


CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



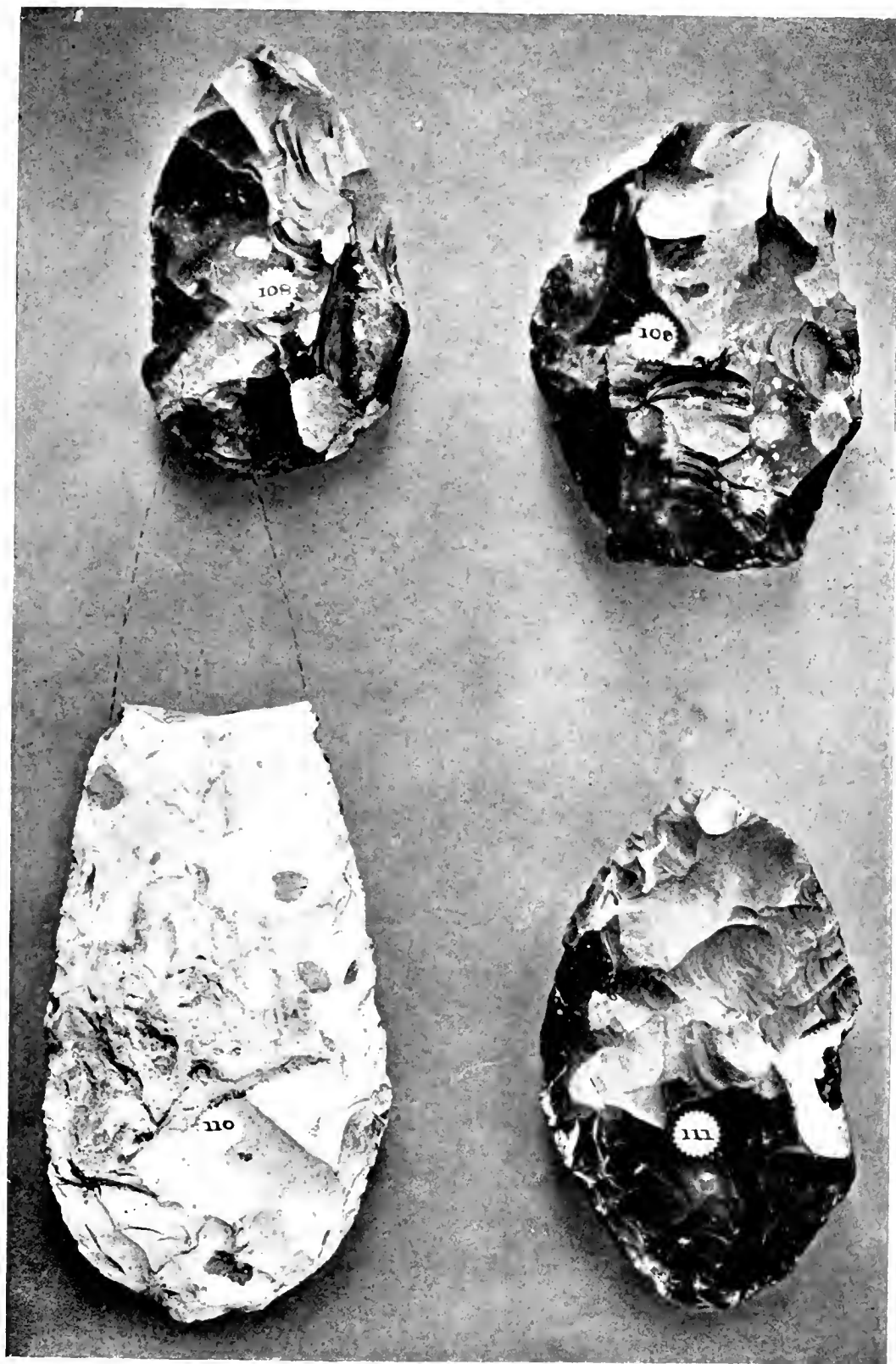
FIGS. 88-96.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



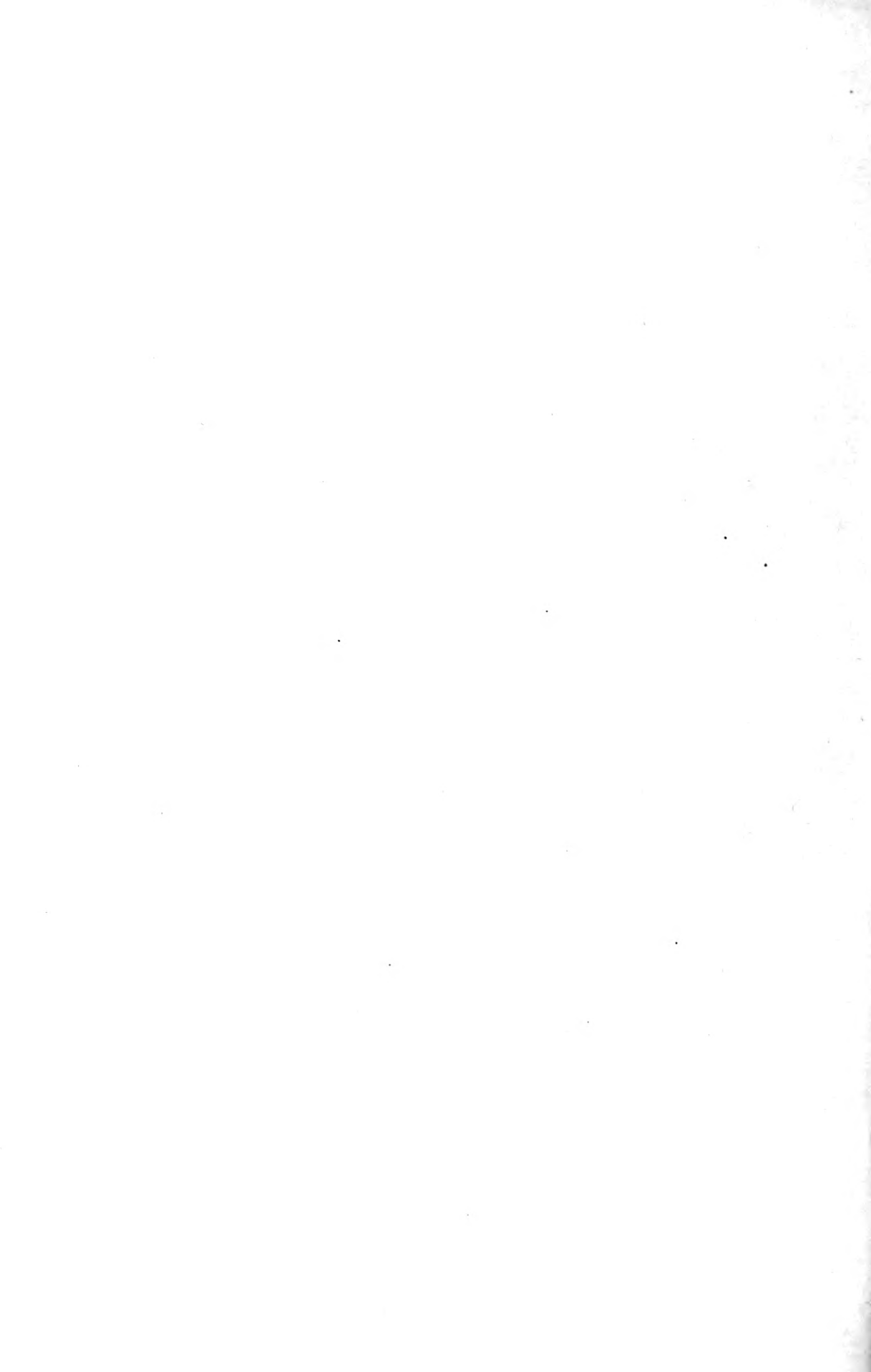
FIGS. 97-107.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.



FIGS. 108-111.

CLASSIFICATION OF THE BRITISH STONE AGE INDUSTRIES.





FIGS. 112-122.

I have some four or five other industries at present upon which I have been engaged for a long time, which I hope to have the honour to describe before this Institute in the future; and if other field workers—unfortunately altogether too small a body—will also publish the results and the details of their labours, we shall then have the archæological materials to hand, and if these are supplemented by the geological and palæontological, then, and not till then, we shall have the necessary data for the classification of the British Stone age industries.

In choosing a typical industry I purposely refrain from all attempts at correlation for the present, as the subject would be too large. That can come when others have furnished their quota of the facts of the field they have specially studied.

DESCRIPTION OF PLATES XLV—LXIV.

[*Note.*—To obtain actual size multiply these plates by 1,000 and divide by number of thousandths quoted.]

- PLATE XLV.—Reverse side of “prestwich.” Prestwichian industry, Baker’s Hole Northfleet, Kent, ‘875.
- „ XLVI.—Obverse side of “prestwich.” Prestwichian industry, Baker’s Hole, Northfleet, Kent, ‘875.
- „ XLVII.—“Prestwiches.” Prestwichian industry, Baker’s Hole, Northfleet, Kent, ‘625.
- „ XLVIII.—“Prestwiches.” Obverses. Prestwichian industry, Baker’s Hole, Northfleet, Kent, ‘520.
- „ XLIX.—“Prestwiches.” Other types, obverses showing “evans” scars, Baker’s Hole, ‘413.
- „ L.—“Prestwiches.” Axe types. Prestwichian industry. Fig. 13 shows restored “evans.” Baker’s Hole, ‘400.
- „ LI.—“Prestwich.” Obverse. Prestwichian industry, Baker’s Hole, ‘900.
- „ LII.—“Evanses.” Prestwichian industry, Baker’s Hole, ‘543.
- „ LIII.—“Evanses.” „ „ „ „ ‘346.
- „ LIV.—“Evans.” Lanceolate type with section showing thickness of implement. Baker’s Hole, ‘900.
- „ LV.—“Evanses.” Prestwichian industry, Baker’s Hole, ‘565.
- „ LVI.—Hâche forms. „ „ „ „ ‘414.
- „ LVII.—Monohedral hâche forms. Prestwichian industry, Baker’s Hole, ‘518.
- „ LVIII.—Heavy Axes. Figs. 43, 44, triangular group; Figs. 45–47, rounded cutting edge group; Fig. 48, hand-chopper. Prestwichian industry, Baker’s Hole, ‘425.
- „ LIX.—Monohedral points. Prestwichian industry, Baker’s Hole, ‘400.
- „ LX.—Knives. Prestwichian industry, Baker’s Hole, ‘470.
- „ LXI.—Large monohedral knives. Prestwichian industry, Baker’s Hole, ‘500.
- „ LXII.—Dolichoclases. Prestwichian industry, Baker’s Hole, ‘435.
- „ LXIII.—Bouchers. Ebbesfleetian industry, Baker’s Hole, ‘466.
- „ LXIV.—Monohedral dolichoclases. Ebbesfleetian industry, Baker’s Hole, ‘523.

TOTEM CLANS AND SECRET ASSOCIATIONS IN AUSTRALIA AND MELANESIA.

BY HUTTON WEBSTER, PH.D.

INTRODUCTION.

THE difficulties which beset an inquirer into the mental and social life of primitive peoples are obviously redoubled when the investigation concerns their esoteric orders. The mysteries of the savage enshrine his innermost religion and worship; for him they possess the sanction of high antiquity; their ceremonial rites, ordained in the beginning of things by the tribal deities, are preserved with jealous care from the gaze of women, children, and uninitiated men. It is convenient to describe such sacred corporations as secret societies; but this appellation, like the terms totemism and taboo, covers a wide range of esoteric phenomena not easily brought within the confines of a single definition. And, if the many remarkable similarities characterizing secret societies in widely separated regions have had often an independent origin, we may be certain, also, that a more intensive examination of different cultural areas will disclose a vast amount of borrowing between related peoples. Comparative studies of the technique of masks and costumes, together with a systematic analysis of the initiatory rituals, when these can be learned in detail, should clear up many puzzling problems of diffusion.

To outside observation the judicial and political duties of the secret societies appeared as their most striking feature, and quite naturally were the first to attract attention. Early in the eighteenth century Francis Moore's picturesque description made the *Mumbo Jumbo* of the Mandingoes a household word. There was something irresistibly comic in the apparition of this masked and costumed bugbear, whose chief business seemed to be that of passing through a village at nightfall, frightening women and children half out of their wits, and scourging with his rod those members of the weaker sex suspected of a departure from the strait path of virtue. Further acquaintance with the secret orders of West Africa revealed the singularly important part played by many of them, such as *Porro* of Sierra Leone, *Oro* of Lagos, and *Egbo* of Old Calabar. They punish crimes and act as public executioners, serve as night police, collect debts, protect private property, and, where they extend over a wide area, help to maintain intertribal amity. When the Melanesian organizations, such as the *Dukduk*, first came into view it was noticed with interest how similar were their functions as judge, policeman, and hangman, to those of the African societies, a similarity which some have

ventured to explain by an hypothesis of prehistoric diffusion across a continent now sunk beneath the waters of the Indian Ocean. In view of the well authenticated instances of precisely the same duties, assumed by some secret societies in America, at points as far removed as Tierra del Fuego, Brazil, and California, a theory of diffusion seems, at least, in this instance, distinctly less plausible than a theory of independent origin. I see in these organizations, so widespread throughout the aboriginal world, one of the most remarkable efforts early man has made to establish, under conditions otherwise anarchical, some semblance of settled government.

But it would be a vital error to infer that the great secret societies of Melanesia and West Africa were consciously devised to preserve law and order in a savage community. There can be little doubt that this legal function is or has been incidental to their main business of initiating young men into manhood. Under their direction the candidates are removed from defiling contact with women, subjected to various ordeals, instructed in all matters of religion, morality, and traditional lore, provided with a new name, a new language, and new privileges—in a word, made men. Such puberty ceremonies still belong to many of the Melanesian and African organizations, though now these bodies are more or less limited in membership, divided into degrees, through which candidates able to pay the cost of initiation may progress, and localized usually in some fixed lodge. Nevertheless, it is not impossible to reconstruct, at least in outline, the steps whereby the rude but powerful aristocracy of a secret society may have emerged from the puberty institution as we find it in Australia and in many other regions, that more democratic body which enrolls in its membership every male and adult member of the community.

There is, however, another aspect of primitive secret societies, very prominent in the American fraternities, but hitherto not sufficiently emphasized in the discussion of related organizations in other parts of the world. I refer to their dramatic and magico-religious ceremonies. The initiates constitute a theatrical *troupe*, with masked and costumed actors often personating animals, and presenting songs, dances, and *tableaux vivants*, which often form an elaborate dramatization of the native legends. Ancestor-worship and the cult of the dead loom large in their rituals: the chief masquerader is frequently a personification of the spirits of the dead; the performers wear skull-masks and represent ancestral individuals whose memory is to be recalled. Ceremonies undoubtedly magical in character, such as rain-making and sorcery, the preparation of charms and spells, the cure of disease, and so on, are associated with many of the societies.

These dramatic and magico-religious features appear to be closely connected with the structure and functions of totem clans. Hence, one is tempted to see not simply a psychological affinity between clans and secret societies, but their truly genetic relationship. Professor Frazer's extensive researches¹ have made it evident

¹ *Totemism and Exogamy*, London, 1910.

that the lower races are very commonly divided into clans whose members maintain an intimate connection with species of natural or artificial objects called totems. Furthermore, it is well known that this social and religious institution of totemism, in different environments and under the stress of various circumstances, does disintegrate, either vanishing entirely or giving rise to a great variety of new groupings and combinations. Among the latter, secret societies would seem to occupy an important place. I have elsewhere¹ presented a considerable body of evidence for the totemic clan organization underlying many secret associations in various parts of the world. The data from Australia and the Melanesian area are particularly instructive and deserve extended consideration.

EASTERN AND SOUTH-EASTERN AUSTRALIA.

The researches of such students as A. W. Howitt and R. H. Mathews indicate that in eastern and south-eastern Australia the initiatory ceremonies bring together all the local groups of a given tribe; or of several tribes when these by intermarriage have formed a community or "nation." The puberty rites thus present a distinctively tribal or intertribal character. It is to be noticed, however, that where the totemic organization is in a flourishing state, one section (class, moiety, phratry) of the tribe, or of several tribes, summons the other to the ceremonies. The tribe or community for its periodical meetings is in principle composed of the united exogamous divisions. The initiatory ceremonies themselves are invariably conducted by the men of that section from which the novice will be allowed to choose his wife. The members of a phratry, sub-phratry, or totemic clan never initiate their own boys. Such arrangements clearly bear witness to the formation of tribal aggregates connected by the practice of exogamy²; just as clearly, it seems to me, they suggest an earlier stage of the social organization when the local (totemic?) groups were independent bodies, initiating their own members.

A similar conclusion as to the original self-sufficiency of the Australian totemic groups may be drawn from the fact that during the puberty ceremonies of such communities as the Coast Murring, whose *kuringal* or *bunan* exemplifies the puberty rites of the south-eastern totemic tribes, the songs, dances, and pantomimes are exhibited in alternation by each of the two tribal divisions. In these performances all the animals represented are totems of the tribe, and the performers themselves, whenever possible, belong to the particular groups whose totem animals they represent.³ Such facts make highly plausible Mr. Howitt's suggestion that the "animal games" and dances presented at the initiatory ceremonies of tribes which, like the Chepara of Queensland and the Kurnai of Victoria, appear

¹ *Primitive Secret Societies*, New York, 1908, chap. ix.

² A. W. Howitt, *The Native Tribes of South-East Australia*, London, 1904, pp. 511 *sqq.*, 608, 640.

³ Howitt, *op. cit.*, pp. 544 *sq.*

to have lost both phratries and clans, are survivals from a time when these peoples possessed a full-fledged totemic system.¹ Indeed, there can be little doubt that secret dramatic ceremonies connected with totemic ancestors formerly enjoyed a wide diffusion among the natives of the south-east. The well-known narrative of David Collins² describes the initiatory rites of the Port Jackson tribe, now extinct, and makes it clear that in New South Wales a century ago there flourished that sacred drama of the totems which to-day can be discovered only in the remoter districts of Australia, where the natives still preserve their ancient lore.

CENTRAL AND NORTHERN AUSTRALIA.

If we assume, with Professor Frazer, that the totemism of the Central Australian tribes is less advanced than that of the coastal tribes, at least, on its religious or magical side, we may expect to find in the central area a greater elaboration of the totemic ritual, so often, though by no means always, associated with the initiation of young men. It is unnecessary to dwell on the general similarity of these historical pageants and miracle plays throughout this region, or on the important place which they hold in the estimation of the aborigines. Proceedings which outwardly appear to be merely imitations of the actions of different animals are really part of the instruction of the novices in the sacred lore connected with the totems and the ancestors of the various clans.

There are, however, certain significant differences between some central and north central tribes as respects the ownership and performance of dramatic ceremonies connected with the totems. Among the Warramunga where, as in other parts of Australia, the totem clans are sharply divided between the two exogamous phratries, the situation parallels that found among the Coast Murring of New South Wales: the dramatic ceremonies are regarded as the property of the whole totem group. Furthermore, though the members of a Warramunga clan celebrate their own ceremonies or ask someone else of the same phratry to do so; they may perform them only at the request of a member of the opposite tribal phratry.³ On the other hand, among the Arunta, each ceremony belongs to a particular individual, either by inheritance from the previous owner or as a gift from an ancestral spirit; and it need not necessarily be either owned or performed by a member of the particular totem to which it refers. At the *engwura*, the last stage in the long series of initiatory rites, when members of all totemic groups meet and mingle, the owner of a given ceremony may request an individual of any totem, and consequently of either phratry, to take part in the performance, the invitation being regarded as a compliment.⁴

¹ Howitt, *op. cit.*, pp. 581 sq., 631.

² *An Account of the English Colony in New South Wales*, London, 1804, pp. 365-374.

³ Spencer and Gillen, *The Northern Tribes of Central Australia*, London, 1904, pp. 192 sq., 298 sqq.

⁴ Spencer and Gillen, *The Native Tribes of Central Australia*, London, 1899, pp. 278 sqq.

Although the "primitiveness" of the Arunta is still *sub judice*, I find it difficult to avoid the conclusion that formerly all their totems were confined to one or other of the two exogamous sections, as is actually the case with the majority of existing totems.¹ Otherwise how shall we explain the fact that when preparations are being made for a given *engwura* ceremony often only the members of one phratry will be present; and the additional fact that when two performances are being prepared simultaneously they are always concerned with the two phratries. In the latter case, the actors of the respective phratries are carefully separated so that they cannot see one another.² Furthermore, if the Arunta totems were once limited to one or other of the phratries, it would follow, on the analogy of neighbouring tribes, that the ownership and performance of dramatic ceremonies was at one time confined to the several totem groups. Even now, every dramatic ritual is associated with a particular totem, and at the *engwura* any initiated member of the totem group with which a given ceremony is concerned may be present when preparations for its exhibition are in progress. No one else comes near except by special invitation of the owner of the ceremony. It is significant also that when a man has received a performance as a revelation from a spirit and gives it to another man, the recipient must be of the totem with which the ceremony is concerned.³ It appears to me, therefore, that the totemic organization of the Arunta, at least as concerns dramatic rituals, is undergoing a gradual transformation, and that ceremonies formerly regarded as the communal property of a single clan are now being parcelled out among the different totem groups making up the tribe. This development in the direction of tribal solidarity would doubtless have gone further if the general meetings of the totem groups were not restricted to such great occasions as the *engwura*.

Magical rites for the multiplication of totem animals are apparently unknown in south-eastern Australia, unless the dramatic representations still found there have or once had a magical content. Among the central tribes there are some noteworthy divergences as respects the ownership and performance of the totemic magic, so characteristic of this area. The so-called *intichiuma* of the Arunta are regarded as the property of the clan group, for any initiated clansman may attend and participate in the ceremonies. In exceptional instances, nevertheless, members of different totems may be invited to witness the rites. Under no circumstances are men who belong neither to the totem nor to the right phratry allowed to be present.⁴ The Urabunna ceremonies are similarly confined to the totem groups.⁵ On the other hand, among the Dieri further to the south, a tribe very closely related to the Urabunna, it does not appear that performances for the multiplication of food animals are restricted to the clans having these animals as totems; the rain-making ceremony is certainly given not by men of the water or rain totem, but by the entire tribe.⁶ Turning to the northern central tribes we find that

¹ Spencer and Gillen, *Native Tribes*, pp. 120 sq.

² *Ibid.*, p. 294.

³ Spencer and Gillen, *Northern Tribes*, pp. 284 sqq.

⁴ *Ibid.*, pp. 278 sqq., 294.

⁵ *Ibid.*, p. 169.

⁶ Howitt, *op. cit.*, p. 397.

among the Kaitish the headman of a totem who performs a magical rite for its propagation is decorated by the men of the opposite phratry; then in the presence of members of both phratries he goes through a ceremony relating to the ancient history of his clan.¹ A like custom prevails in the Worgaia tribe, where the co-operative aspect of this totemic magic is clearly exhibited.² The Warramunga ceremonies exhibit a stage more advanced. Here the magical performances, for the most part, consist simply of dramatic representations of scenes in the life of totemic ancestors; and such historical pageants, though regarded in each instance as the property of a particular group, may only be given at the invitation of the opposite section of the tribe. It is the members of the latter body who provide all the decorations for the ceremonies and receive presents from the performers.³ Still further northwards, among the Tjingilli, a dramatic-magical ceremony may be given by all the men of one phratry and therefore by men of many totems. Similarly, among the tribes about the Gulf of Carpentaria, the participants in magical rites may be any members of that half of the tribe to which the totem belongs.⁴ In north-western Australia, when magical ceremonies are given, the performers must be drawn exclusively from one of the four exogamous sub-phratries (phratries?). However, no members of other sub-phratries may attend at the celebration of the rites: their presence, it is believed, would break the magic spell.⁵

Thus, as we advance from the interior of Australia towards the coasts, the evidence appears conclusive that the organization by phratries tends to assume a special importance in the performance of magico-dramatic ceremonies, once confined to particular groups. The increased significance of the phratries is further reflected in the funeral customs observed in the northern central area, where, as among the Binbinga, Anula, and Mara tribes, distant groups belonging to the sub-phratries participate in the final rites and witness ceremonies relating to the ancestor of the totemic group to which the dead man belonged.⁶ Again, the increased significance of the phratric organization is indicated for the Warramunga by the conditional extension of the totemic food taboos to include all the members of one phratry. A Warramunga man will never eat an animal associated with a totemic group, belonging to his own phratry, unless it be given to him by a man belonging to the other phratry of the tribe.⁷ The elaborate system of food taboos strictly observed by the phratries and sub-phratries of the north-west central Queensland tribes, where clans are reported non-existent,⁸ may show that here also the larger social divisions are superseding or have already superseded an elder organization in totem clans.

From a general point of view we are perhaps entitled to regard the Australian

¹ Spencer and Gillen, *Northern Tribes*, p. 292.

² *Ibid.*, p. 296.

³ *Ibid.*, p. 298.

⁴ *Ibid.*, pp. 311 *sqq.*

⁵ E. Clement, "Ethnographical Notes on the Western Australian Aborigines," *Internationales Archiv für Ethnographie*, 1904, vol. xvi, pp. 6 *sq.*

⁶ Spencer and Gillen, *Northern Tribes*, pp. 173 *sq.*, 549 *sqq.*

⁷ *Ibid.*, p. 167, n. 1.

⁸ W. E. Roth, *Ethnological Studies*, Brisbane, 1897, pp. 57 *sqq.*

evidence as illustrating how the close contact of small and independent groups, each with its own functions and ritual, may give rise to a more centralized or tribal system, which in matters magical, dramatic, funereal, and initiatory, ignores the old "departmental limits" of the totem clans. If now a wandering Australian tribe were to abandon its migratory habits and acquire a permanent abode, the secret association of its male members would present many points of resemblance to esoteric organizations outside the Australian area. For the aborigines of Australia possess the equivalents of the men's house and the secret "lodge"; they possess the interesting system of age classifications, which in many instances furnish the "degrees" of the fully formed secret society; they possess anthropomorphic deities presiding over the mysteries. They possess bull-roarers, bizarre costumes and disguises, which indicate the connection of the wearers with ancestral spirits, and so easily become a means of terrifying the uninitiated. Such features as these, more thoroughly fused, characterize the secret associations of Melanesian peoples.

TORRES STRAITS: WESTERN ISLANDS.

On the islands of Torres Straits we find a population in physical appearance and culture closely related to the Papuans of New Guinea, yet the affinities of the language spoken by the Western Islanders are Australian, a fact which may indicate that their original stock was Australian, though subsequently overlaid by a gradual Papuan infusion. From this point of view it is at least significant that a totemic system has been found in practice only in the Western Islands. The general features of the totemism in this region are well known. Originally, the members of each totem appear to have lived together in one district; a similar local segregation of the two phratries, for whose previous existence there is unequivocal testimony, has now been largely obliterated: with regard to marriage relations, local exogamy is superseding clan exogamy as among the Kurnai of Victoria and elsewhere in south-eastern Australia. The decline of the totemic organization in the Western Islands may be attributed in a measure to foreign influences; but it seems clear that much importance must be ascribed to the geographical localization of the old totem groups and to the emergence of a settled village economy. The clans, however, have not wholly disappeared as social units; indeed, the solidarity of the totem clan is still one of the most marked features in the life of the people.¹

In several instances the puberty ceremonies of the Western Islanders exhibit an underlying clan organization. In this part of Torres Straits the men's house (*kwod*) appears as an open space definitely and permanently set apart for ceremonial uses. After initiation the young men could frequent the *kwod*, and they habitually slept there. The institution thus corresponds, in part to the bachelors' camp, in

¹ *Reports of the Cambridge Anthropological Expedition to Torres Straits*, Cambridge, 1904, vol. v, p. 161.

part to the *bora* ground, of Australian natives. Though some islands possessed only a single *kwod*, others, such as Mabuia, had several, and each belonged to a particular clan. The Mabuia folk also had a "national" *kwod* of all the clans on the sacred islet of Pulu, where the secret initiatory ceremonies occurred. The *kwod* contained the fireplaces of the five chief clans, so arranged as to exhibit the former dual grouping (phratries) of the Mabuia people.¹ Similarly, when the natives of Tutu and Yam met in their common *kwod* for initiation, four mats and as many fireplaces were assigned to the four clans, and the arrangement once more suggested the dual division of the people. The youths undergoing initiation were allocated to that end of the *kwod* which was farthest away from the mats of their respective clans, and in the territory belonging to men of the opposite section of the community.² Although the grouping of the clans of the Western Islanders has ceased to exert a preponderant influence on marriage relations, the dual system, as in Australia, is still disclosed at gatherings for initiatory purposes.

Magical rites associated with particular clans are found on the island of Mabuia, where two of the seven clans possess performances, in the one case to control the dugong, in the other case to multiply turtles. Women and children and members of other clans do not come near at such times. It should be noticed that in each case the magical rite takes place not in the village, but in the special *kwod* of the clan. Furthermore, for the *surlal* ceremony the clansmen paint themselves to represent the turtle, wear headdresses of cassowary feathers, and dance round the turtle, whirling bull-roarers.³ No magical performances are definitely associated with the remaining clans of Mabuia, nor are they mentioned as existing in the other Western Islands.

In several islands there are various magico-religious practices, common, apparently, to the entire community, for the multiplication of food animals⁴; and these it is possible to regard as formerly connected with totemic clans. Such, originally may have been the two turtle ceremonies at Gumu on the island of Mabuia, where bull-roarers were swung and dances were given by performers swathed in leaves.

In another turtle rite celebrated by the Mabuia folk in their communal *kwod*, a number of men surrounded the four chief actors, while masked and costumed individuals, representing spirits associated with waterspouts, played about. The people of Mabuia had also a three days' dance, which they regarded as "only play, like holiday," but which was clearly a representation of dugong fishing. The performers wore masks and petticoats of coconut leaves. In the light of the evidence from the Warramunga and other Australian tribes, this dramatic ceremony may well have been once a magical proceeding. Magic for the good of the crops⁵ is also represented by the ceremonies at Mabuia, when certain individuals went through the gardens dancing and swinging bull-roarers to make

¹ *Reports of the Cambridge Anthropological Expedition to Torres Straits*, Cambridge, 1904, vol. v, pp. 3 sqq., 172 sq., 213.

² *Ibid.*, vol. v, pp. 173 sq., 208 sqq.

³ *Ibid.*, vol. v, pp. 182 sqq.

⁴ *Ibid.*, vol. v, pp. 330 sqq.

⁵ *Ibid.*, vol. v, pp. 345 sqq.

the plants grow. At Yam, when fruit was ripe and the yams and sweet potatoes were ready for use, a masked dance was held, and the performers toiled zealously through the entire night. In nearly all the Western Islands there were annual masked dances when the *ubar* was ripe, the object of which was to ensure a good crop of fruit. Their most characteristic feature at Yam was the presence of a single dancer wearing a huge conical mask or extinguisher of coconut leaves, and a leafy skirt. It was highly important that the performer's identity should be unknown, hence he came into the village at nightfall and disappeared at daybreak. The mummer was greatly feared by the men and women whom he chased about. A similar custom prevailed at Mabuiag, where two masked dancers participated in ceremonies lasting for several weeks.¹ Such performances among the Western Islanders help to explain the terrorist activities of secret societies in New Guinea and the Melanesian Archipelago.

The relation of totemism to the cult of the dead appears in several of the Western Islands of Torres Straits.² At Mabuiag certain individuals, necessarily of another clan than that to which the deceased belonged, cared for the corpse and gave pantomimic performances indicating the totem animal of the dead man. At Muraing these "undertakers" recited a special formula referring to the characteristic actions of the totem. Aside from such customs, the funeral ceremonies had a communal character; at least this was so for the great dance or *tai* of the Mabuiag people.³ It took place not in one of the clan *kwod*, but in the "national" *kwod* at Pulu, and always preceded the puberty rights held there. Preparations for the *tai* were made in secret by certain individuals, who went into the bush far away from the women and uninitiated men. The performers represented the ghosts of recently deceased tribesmen. They were disguised with leafy petticoats and masks, and in this costume mimicked the characteristic gait and actions of the deceased. Such a dramatic entertainment could be witnessed from afar by women and children who were supposed to believe that the actors were really spirits of the dead; a female of sceptical tendencies who inquired too closely into the identity of the dancers "died that night." At some time during the performance two men would go into the bush to frighten the women by making them believe that the spirits had come for them. The death dances practised by the inhabitants of Tutu and Yam were similar ceremonies.⁴ The masked men, we are told, used to go behind the houses in the night and blow bamboo whistles, whereupon the women cried. Thus the *tai*, in part a kindly rite, contains the germs of that intimidation practised by the men over the weaker sex, which, though met in Australia,

¹ At Mer (Eastern Islands) the people of different districts on the island held annual masked dances, which were probably magical performances to secure a good harvest. The dance in each case was rendered by representatives of a particular group; spectators from other groups might be present, but they were not permitted to wear the masks or otherwise join in its ceremonies (*Reports of the Cambridge-Anthropological Expedition to Torres Straits*, vol. vi, pp. 209 sq.).

² *Ibid.*, vol. v, pp. 185 sq., 248 sqq. ³ *Ibid.*, vol. v, pp. 252 sqq. ⁴ *Ibid.*, vol. v, pp. 257 sq.

reaches its fullest development in the secret societies of the Melanesian Archipelago.

An important person in the mythology of the Mabuiag folk, was the culture hero Kwoiam.¹ He seems to have been an immigrant from Australia, who after death was apotheosized. His totem was the shovel-nosed skate (*kaigas*), or this and the turtle (*surlal*). Two magical crescents of turtle shell made by him were called *augud*, the name regularly given to a totem. But in his cult at Mabuiag we have to deal no longer with the separate clans but with the phratries. The two social divisions had the crescents for their respective emblems, and the phratry names evidently referred to these magical insignia. Yet even at Mabuiag Kwoiam was sometimes spoken of as a totem; in some of the neighbouring islands he was regarded as the "big *augud*." We may perhaps conjecture that, as the Mabuiag clan system tended to pass into a more centralized grouping, Kwoiam the immigrant hero became associated with an indigenous deity of totemic origin. In this way could be explained the definite connection of Kwoiam with the phratries, and the performance of secret ceremonies in his honour within the national *kwod* on the islet of Pulu, which tradition connected with some of his exploits.

In several of the Western Islands the mingling of totemic groups has led to the decided pre-eminence of certain clans over others. Among the people of Tutu and Yam there seem originally to have been four totem clans segregated in two divisions, an arrangement still recognized in the initiation ceremonies. The *kodal* clan, however, has become the most important member of its group, and the *kursi* clan introduced from another island, or perhaps having developed in importance locally, has taken the leading place in the second group. The island of Tutu is now divided into two districts, belonging respectively to the *kodal* and *kursi* groups. A consequence of these social changes, coupled with cultural growth, is probably to be seen in the gradual emergence of the two principal totem animals—*kursi*, the hammer-headed shark, and *kodal*, the crocodile—into anthropomorphic personalities, identified with the immigrant brothers Sigai and Maiau. The saga of their wanderings across Torres Straits fills a large place in native mythology.² Their images are kept in shrines in the *kwod* near the centre of the island, where no uninitiated person may visit them; here the men's house has become a temple as in New Guinea and elsewhere in Melanesia. Women and children have indeed heard of Sigai and Maiau, but they do not know that the former is the same as *kursi*, the hammer-headed shark, and that the latter is really *kodal*, the crocodile. As with the sacred name Daramulun, in the Australian rites, this mystery is only imparted to the youths undergoing initiation. Various secret ceremonies take place in the shrines within the *kwod*; food is piled up in two heaps, one for *kursi*, one for *kodal*, and every year at the time of the north-west monsoon, when boys are being admitted to manhood, the men dance totem dances, the *kursi* performers on the one side, and the *kodal* actors on the other. The songs addressed to Sigai

¹ *Reports of the Cambridge Anthropological Expedition to Torres Straits*, vol. v, pp. 67 *seq.*, 153 *sq.*, 367 *sqq.*

² *Ibid.*, vol. v, pp. 64 *sq.*, 174, 373 *sqq.*

and Maian gave fine weather, whether it rained or blew, and they possessed as well great potency in warfare. Thus on the islands of Yam and Tutu, as at Mabuiag, dramatic and magico-religious ceremonies connected with a hero cult seem to be largely supplanting the older totemic ritual. In other parts of Melanesia such esoteric rites have gathered round the figures of anthropomorphic deities, who perhaps likewise had a totemic origin. However this may be, the hero cults of the Western Islanders help us to understand why primitive secret societies should so often enshrine the inner religion of an aboriginal people.

TORRES STRAITS: EASTERN ISLANDS.

Among the Miriam of the Murray Islands, and probably also among the other Eastern Islanders of Torres Straits, totemism is not discoverable as an existing institution, though apparent traces of its former presence are not far to seek.¹ The relationship of the Miriam to the Western Islanders is very close, but in various social matters they have advanced beyond the latter people; among the Miriam, for instance, the territorial grouping of the totem clans has resulted in village exogamy, and the dual organization of the western clans has quite disappeared. In the Murray Islands, it is highly probable that formerly there were secret initiatory rites associated with the several clans, but with one or two exceptions they appear to have dwindled away on account of the predominance of the *bomai-malu* organization. Rites of initiation, together with the related magico-religious performances (*zogo*),² and funeral ceremonies (*keber*),³ seem to have been originally held in the clan *siriam*, a term equivalent of the *kwod* of the Western Islanders. "I am of opinion," writes Dr. Haddon, "that in early days the Miriam were organized in a similar manner to the Western Islanders, and that each local (totemic?) group had its taboo-ground where lads were initiated, and where ceremonies were held, some of which almost certainly had for their object the control of plants, animals, or the elements, while others, in all probability, were associated with the death of a member of the local group."⁴

Various interesting features characterized both *zogo* and *keber* rites. Only certain men officiated in the *zogo* ceremonies. Their office appeared to be hereditary in particular families, and passed from father to eldest son. *Zogo*, moreover, were always connected with some group of the people, and were not practised by the community at large. Some belonged especially to districts or to villages on the island of Mer, and others were the property of one or other of the two divisions comprising the *bomai-malu* association.⁵ The *keber* ceremonies, the Miriam equivalent of the *tai* among the Western Islanders, were likewise associated with definite districts on the island of Mer. Such ceremonies, however, could be

¹ *Reports of the Cambridge Anthropological Expedition to Torres Straits*, Cambridge, 1908, vol. vi, pp. 172 *sqq.*, 254 *sqq.*

² *Ibid.*, vol. vi, pp. 242 *sqq.*

³ *Ibid.*, vol. vi, pp. 126 *sqq.*

⁴ *Ibid.*, vol. vi, pp. 272 *sq.* Cf. p. 129, n. 1.

⁵ *Ibid.*, vol. vi, pp. 174, 201, 226 *sq.*, 237 *sqq.* 243, 266 *sqq.*

witnessed by members of different groups, only the actual performance being restricted to the people of a particular district. Nearly all these funeral rites, which were marked by the presence of masked and costumed actors simulating the denizens of the spirit world, referred to members of the *bomai-malu* association.¹

The *bomai-malu* "fraternity" consisted of two divisions.² One class of "shark men," the *beizam boai*, included the leading members of the order; the other class (*zangareb le*) were singers and drum-beaters at the ceremonies. Certain other people, described as "friends" (*tebud*), acted as assistants to the two principal classes, but had no right to participate actively in the performances. It is natural to regard these two classes as representative of an earlier arrangement of the Miriam by phratries. Such groups are not to be considered grades or degrees, for an individual belonged to one or other of them by birth, and did not progress from the one to the other. In general, the people of a given district on the island were restricted to a single division; only in two cases was there a want of correspondence between the *bomai-malu* grouping and the grouping into districts. The shark brethren, the most important members of the order, were arranged in two sub-classes, the *zogo le*, who were entitled to wear the masks, take a leading part in all ceremonies, and receive all the presents of food; and the *tami le*, who ranked next to the *zogo le*, and assisted them in the performances. Other and smaller groups which participated in the ceremonies, and danced animal dances, were the dog men, the pigeon men, and the *geregere* men.³ Though there is no direct evidence that these were derived from the Miriam totem groups, it is difficult not to regard them as at least in part the vestiges of ancient clans. In any case their performances present a close analogy to the dramatic representations of totemic ancestors so characteristic of Australian initiatory rites.

Even if we assume that the cult of *bomai-malu* was introduced from abroad, apparently from New Guinea, there are certain facts presented by Dr. Rivers which suggest that the two divisions of the association may have fitted in with a dual organization previously existing on the island.⁴ Indeed, it is questionable whether much more than minor features of the *bomai-malu* cult, such as certain masks, have been imported into the Murray Islands; it would rather seem that the culture-hero bearing these names (*bomai* to the initiated, *malu* to the vulgar) had independently emerged from the totem of the shark people. The amalgamation of totemic clans leading to the decided predominance of one clan over the others, and coupled therewith, the rise of totems into tribal deities, is a phenomenon met elsewhere in Torres Straits.

The *bomai-malu* association was organized on democratic principles.⁵ All the male inhabitants of Mer, save certain individuals (*nog le*), regarded as "foreigners," enjoyed by birth the privilege of membership after initiation at adolescence. Fees,

¹ *Reports of the Cambridge Anthropological Expedition to Torres Straits*, Cambridge, 1908, vol. vi, pp. 284, 312.

² *Ibid.*, vol. vi, pp. 169 sq., 255 sq., 285 sqq.

³ *Ibid.*, vol. vi, pp. 308 sqq.

⁴ *Ibid.*, vol. vi, pp. 174 sq.

⁵ *Ibid.*, vol. vi, pp. 281 sqq.

aside from a present of food, were not required for entrance. The rites of initiation took place in three sacred grounds, and the participants were so thoroughly disguised as to be unrecognizable. Bull-roarers were not employed in any of the ceremonies. The chief features of the secret performance appear to be the singing of ritual songs referring to the exploits of *bomai-malu* and the solemn exhibition of the masks to the initiates. The latter were instructed in their social, economic and religious duties, and were warned not to reveal the secrets, these injunctions being emphasized by terrorising and even by ill-treatment. Subsequently, a public ceremony took place which signified that the youths had now become duly admitted to manhood and henceforth were members of the community. It was on this occasion that the series of remarkable animal dances was performed.

The *bomai-malu* association had also its disciplinary and terrorist aspects; to keep up the element of fear and mystery, the members relied on Magur, a spiritual personality whose antecedents are obscure.¹ Part of the initiation ceremonies consisted in thoroughly frightening the novices with representations of Magur. Subsequently, they learned that this bugbear and his attendant mummers were not really ghosts, but only common men dressed up. All breaches of discipline, or acts of sacrilege, or deeds that brought the individual into disfavour with the authorities, were punished by Magur. In these several respects the *bomai-malu* association presents the familiar features of tribal secret societies elsewhere in Melanesia.

BRITISH NEW GUINEA.

On the southern coast of New Guinea a totemic system has been observed in the Mawatta (Mowat) tribe in the district of Dandai. The various clans, cassowary, alligator, dog, shark, and so on, appear to be grouped in two phratries, each with its principal and subsidiary totem. This dual grouping is recognized in the initiation ceremonies, for which two fences are erected, one fence for the crocodile-shark group, the other for the cassowary-dog group. No bull-roarers are used in the rites. The novices are told about their totems, and turtle shell masks, representing human faces, are shown to them.² In several instances, magical ceremonies are associated with a particular clan; the men who have sago for their totem go through performances to make the sago palm flourish, and members of the coconut totem work magic for the multiplication of their totem plant.³ Like the Mabuia folk, the people of Mawatta resort to magic for the increase of the yam crop. Bull-roarers are swung when a garden is planted; without this ceremony the

¹ *Reports of the Cambridge Anthropological Expedition to Torres Straits*, vol. vi, pp. 311 sq. According to the Rev. A. Hunt, Malu as a beneficent chief spirit was known as Agud (= Augud); when angry and vindictive he was called Magur ("Ethnographical Notes on the Murray Islands," *Journal of the Anthropological Institute*, 1899, vol. xxviii, p. 7).

² *Ibid.*, vol. v, p. 188.

³ J. G. Frazer, *Totemism and Exogamy*, London, 1910, vol. ii, pp. 31 sqq., from information supplied by Dr. C. G. Seligmann.

ground could not be fruitful. Women may not see the mysterious instrument though they may hear its booming sound. We are not told whether those who perform this ceremony are masked and whether they must have the yam for their totem. Initiation ceremonies (*moguru*) take place at puberty, but they seem at present not to be very closely connected with the totems. Boys are said to know all about their totems before initiation.¹

West of Daudai and at the mouth of the Mai Kasa live the Bugilai, the remnant of a much larger community which was forced eastwards by the savage Tugeri. The Bugilai were first visited by the late James Chalmers. They possess a totemic system as yet inadequately described. It is, perhaps, of some significance to learn that at the initiation of their young men "they practice sodomy, but not bestiality, as some other tribes do."² Still further west, on the Bensbach River, which marks the boundary between British and Dutch New Guinea, there is a totemistic tribe, the Toro, with bull-roarers and initiation ceremonies at manhood.³

In Dutch New Guinea, but close to British territory, the Kaya-Kaya or Tugeri have a well developed system of totemic clans. Here there are men's houses where all the male inhabitants of a village live and sleep, and, in addition, special resorts for the bachelors, who stay in them during the day. We may suspect, on the analogies elsewhere, that these houses were once restricted to the several clans. Initiation is now a communal festival, bringing together the inhabitants of several neighbouring villages. On such occasions there are many dances in which the performers wear masks and represent animals. The Tugeri anthropomorphize the bull-roarer as Sosom, a mythical giant, who kills the novices but brings them again to life.⁴ A very elaborate system of age-classes for both sexes exists among the Tugeri. The passage from a lower to a higher class is always the occasion for a feast accompanied by dancing. Each grade has its distinctive badges. Amongst the males, the first grade includes all boys up to adolescence. When the first signs of puberty occur the lads take up their abode in the bachelor's hall.⁵ It is probable that the several age-classes of the Tugeri are definitely associated with the secret initiation ceremonies, as is the case with the Elema tribes of the Papuan Gulf.

Returning to British New Guinea, we meet an extensive totemic system on Kiwai Island, off the mouth of the Fly River. In Iasa, the largest village of

¹ Frazer, *op. cit.*, vol. ii, p. 34.

² J. Chalmers, "Notes on the Bugilai, British New Guinea," *Journal of the Anthropological Institute*, 1903, vol. xxxiii, p. 109. In the *ingiet* association of New Pomerania, sodomy, which the natives do not regard as immoral, is one of the concomitants of initiation (R. Parkinson, *Dreissig Jahre in der Südsee*, Stuttgart, 1907, p. 611). In the *kuringal* of the Coast Murring there were pantomimic actions before the novices representing the offences "for which, it is said, the cities of the plain were destroyed by celestial fire" (Howitt, *op. cit.*, p. 549).

³ Frazer, *op. cit.*, vol. ii, p. 35, from Dr. C. G. Seligmann's notes.

⁴ R. Pösch, "Vierter Bericht über meine Reise nach Neu-Guinea," *Sitzungsberichte der mathematisch-naturwissenschaftlichen Klasse der kaiserlichen Akademie der Wissenschaften*, Vienna, 1906, vol. cxv, pp. 899 *sqq.*

⁵ H. Nollen, "Les différentes classes d'âge dans la société Kaia-kaia, Merauke, Nouvelle Guinée Néerlandaise," *Anthropos*, 1909, vol. iv, pp. 553 *sq.*

Kiwai, there are sixteen dwellings, each occupied by a single clan. Some of the clans appear not to have houses in the settlement, and occasionally a few clans may have more than one habitation. The men enjoy a room to themselves at each end of these communal structures—an interesting illustration of architectural adaptation to new social needs. The Iasa people are agriculturists, and their initiatory ceremonies reflect their economic environment. On such occasions there are secret rites to ensure plentiful crops; bull-roarers are swung and shown to the novices: the performers are decorated and wear headdresses of cuscus skin. It does not appear that these magical performances are now limited to particular clans; but this may fairly be presumed to have been once the case. A system of age-classifications probably exists. We are told of a certain mask worn by men at the last stage of initiation, when some of the candidates are nearly forty years old. The maskers are called *eboro*, or spirits; women and children are terribly afraid of them.¹

In the Elema district, which stretches from the Alele River on the west to Cape Possession on the east, it appears that at least some villages are divided into clans, each with one or more totems (*ualare*), representations of which are exhibited outside the club houses (*eravo*, *elamo*, *erabo*).² These structures, among the Toaripi or Motumotu of Freshwater Bay, and probably among the other Elema tribes, are occupied in every instance by a single clan. Boys undergoing initiation are confined in the upper story.³ Initiation rites exist among the Toaripi.

According to Mr. Chalmers, the *tiparu* or bull-roarer is only seen by men at manhood, and large quantities of food must first be provided for the directors of the ceremonies. At such a time all the women and young children leave the village lest they hear the bull-roarer and die. Masked men who, according to Chalmers, are called *oioi* or spirits, enforce the taboos (*safu*) on the coconuts, sometimes executing an offender on the spot. Their masks are made of native cloth stretched on a wicker frame. The cloth is whitened with lime and painted in various colours to represent a human face. The *oioi* run and dance through the village swinging heavy sticks and frightening women and children.⁴

The *oioi* of the Toaripi would seem to be identical with the *harihu*,⁵ among the Elema tribes generally. The latter name is applied both to the individuals composing the organization and to the masks they wear. Their chief duty at the present time is the protection of garden produce by taboos, which last till the crop is ripe for gathering. When the fruit is fit to eat the *harihu* inform the chief, who

¹ *Reports of the Cambridge Anthropological Expedition to Torres Straits*, vol. v, pp. 189 *sqq.*, 218 *sqq.*; J. Chalmers, "Notes on the Natives of Kiwai Island," *Journal of the Anthropological Institute*, 1903, vol. xxxiii, p. 119.

² C. G. Seligmann, *The Melanesians of British New Guinea*, Cambridge, 1910, p. 213.

³ A. C. Haddon, in *Science Progress*, 1894, vol. ii, pp. 85 *sq.*

⁴ J. Chalmers, "Toaripi," *Journal of the Anthropological Institute*, 1898, vol. xxxvii, pp. 329, 334. Cf. J. H. Holmes, "Initiation Ceremonies of Natives of the Papuan Gulf," *ibid.*, 1902, vol. xxxii, pp. 418-425.

⁵ Seligmann, *op. cit.*, pp. 300 *sq.*

announces from the verandah of the clubhouse that the people may gather the food. Then the entire village join in a great feast, only the *harihu*, who remain in the clubhouse, holding aloof. The taboos are supported, apparently, by sanctions, both human and divine, since an offender, should he escape the hands of the *harihu*, would certainly perish from contact with the spiritual power (*vada*), which invests the taboo sign. Novices during initiation in the *eravo* learn that the *harihu* are human beings and not spirits from the bush. Any woman approaching a *harihu* would be killed, and children mercilessly beaten. When the maskers make their appearances they always come in from the bush side of the village, and for some time previously they live in a shelter near by, where they are visited by a few old men. After each visitation of the *harihu*, their masks are burnt.¹

There seems good reason for believing that the *harihu* is now an association of individuals from the various clans, local groups of which have settled in the different villages. Each Elema village has its own *harihu*, the members never appearing simultaneously in neighbouring communities. The mask of each individual *harihu* is said to differ from all others. The owner's clan badge is often worked upon the mask, although it is not perhaps absolutely necessary that this should be so. Probably the badges are also used to decorate the clan clubhouses. These several features recall the situation among the Western Islanders of Torres Straits, where most of the *kwod* belong to the several clans, and where also it is customary for the members of a clan to wear some distinguishing emblem of their totem. The masked dances forming a part of the agricultural rites in Yam and Mabuiag present a close similarity to the *harihu* performances, but in Torres Straits the dances have a purely magical purpose—to make the plants grow. The dancers, unlike those in New Guinea, do not serve as a native constabulary. But if the *harihu* members were originally regarded as the special representatives of the several clans, each of which was supposed to exert a magical power over the crops, one can understand how the growing requirements of social and economic life might readily convert a magical ritual into such a *quasi-judicial* procedure as is found among the Elema of British New Guinea.

According to the researches of Dr. Seligmann the settlements of the Western Papuo-Melanesians in New Guinea begin at Cape Possession and extend eastwards along the coast to Orangerie Bay. Among the Roro-speaking tribes which border on the Papuans of New Guinea at Cape Possession, the *harihu* reappear under the name of *kaivakuku*.² The custom, at least in its present form, has probably been introduced from the Elema tribes of the Gulf. The *kaivakuku* are less dreaded here than their Elema counterparts, since there is a recognized form of punishment for men caught breaking the taboos of the crops. The *kaivakuku* cannot impose

¹ After the *dukduk* disappear their house in the bush is burned, and the dresses they have worn are destroyed. "Great care is taken to destroy everything they have touched, the canes and clubs being burned every day by the old men" (H. H. Romilly, *The Western Pacific and New Guinea*, London, 1886, p. 33).

² Seligmann, *op. cit.*, pp. 299 *sq.*

such prohibitions of their own initiative but act merely as the agents of the old men and chiefs when the latter decide to proclaim a taboo. In this respect the rule is the same among the Elema tribes. The right of belonging to the *kaivakuku* is hereditary. The association has been found only in two or three Roro villages and in these appears to be decadent. Thus at Waima now there are only five members whereas formerly there were twenty. The settlements in Waima, most of which are local groups of different clans, number about twenty¹; accordingly we may believe that the *kaivakuku* once represented the several clans. Such a conclusion is strengthened when we learn that clan badges or *ōāōa* (*oioi* ?) are represented on the *kaivakuku* masks.² The *marea* or clubhouses throughout this region belong to the local groups of each clan found in the different villages. The badges of the clan are carved on the posts of these structures.³ Each clan likewise had its special *marea* for the puberty rites which, though now obsolete, must have been originally clan ceremonials. Yet the close contact of the several clans in a village came gradually to be reflected in the initiation ceremonies. Thus at Waima, all youths, regardless of their clan affiliations, were confined together in one *marea*, each of these structures in turn being the scene of initiation.⁴

The Mekeo-speaking tribes, the Biofa and Vec, dwelling further inland behind the Roro peoples, are also divided into exogamous clans, usually comprising several local groups settled in the various villages. A few villages consist of one clan only. Each of the original clans possessed, and each local group of every clan should still possess, at least one *ufu* or clubhouse. There has been frequent contact between Mekeo and the more eastern of the Elema tribes; to this fact Dr. Seligmann attributes the adoption of certain Elema customs, notably that of the *harihu* (*haivakuku*).⁵

Further to the east, among the Motu and Koita tribes in the neighbourhood of Port Moresby, the clan system is in evident decay.⁶ The local groups of certain clans have become extinct and the clan badges themselves have little significance. The Koita form of the clubhouse, here styled *dubu*, is simply a large platform supported by carved posts. It is sacred to the spirits of the dead. There is clear evidence as to the former clan ownership of the *dubu*. Most of the buildings are now raised in preparation for a special feast, essentially a clan ceremonial, to which however, visitors from other clans may be invited. No initiation ceremonies or secret associations are found among the Koita and Motu. It is impossible to determine how far their numerous songs and dances,⁷ the majority of which are not obviously pantomimic, represent the survival of earlier clan performances.

The Eastern Papuo-Melanesians, or Massim, occupy the south-eastern extremity of British New Guinea from Orangerie Bay on the south to Cape Nelson on the north, and they are also spread over the adjacent archipelagoes. In spite of many cultural differences between Eastern and Western Papuo-Melanesians, the two

¹ Seligmann, *op. cit.*, pp. 199, 301 n. 1.

² *Ibid.*, p. 210.

³ *Ibid.*, pp. 223 *sqq.*

⁴ *Ibid.*, pp. 258 *sqq.*

⁵ *Ibid.*, pp. 314, 320.

⁶ *Ibid.*, pp. 51, 60 *sqq.*, 131, 147 *sqq.*

⁷ *Ibid.*, pp. 151 *sqq.*

peoples agree in certain respects, notably in the absence of long and rigid seclusion ceremonies for boys at puberty.¹ Yet in certain parts of this area initiation rites are still celebrated, as at Bartle Bay (Southern Massim), where they distinctly show the disintegrating effects of contact with the missionaries.² At the present day the physical development of the boy does not seem to play any part in determining when he is to be initiated. The novices sleep in a special building called by the same name, *potuma*, which is applied to the clan clubhouses. There is no separation of the clans in the *potuma* during seclusion, but the ceremony, we are told, does not seem to exert any influence in the direction of uniting the various clan groups. Among the Northern Massim, comprising the inhabitants of the Trobriands, the Marshall Bennets, and adjacent islands, though there is no initiation, the boys at about puberty are required to sleep in a separate building, which is shared by members of all the clans. The children are told to what totem they belong at a fairly early age; indeed, it seems that their parents explain the privileges and prohibitions attaching to clan membership as soon as the children can be expected to understand them.³ The absence of secret associations throughout this area, according to the hypothesis previously set forth, would be connected with the obsolescence of the puberty rites and with the continued existence of a well defined totemic system. Among the Massim the clans have not as yet fused into an inclusive tribal organization.

GERMAN NEW GUINEA.

In German New Guinea the only clear traces of totemism which Professor Frazer's extensive researches have disclosed are found among the Yabim, a tribe near Simbang on Finsch Harbour. It is probably not without significance that here there exist the men's house (*lum*), and secret initiatory ceremonies at which sacred flutes are played and bull-roarers are swung. The mysterious spirit who presides over the rites of circumcision, swallowing the boys but duly vomiting them forth on receipt of a number of pigs, is called Barlum; the bull-roarer is "the roar of the Barlum." These ceremonies, perhaps originally confined to totemic clans, are now distinctly tribal in character, since their celebration, once every twenty years, brings together all the male inhabitants of several neighbouring villages.⁴

The *barlum* ceremonies include an area along the Maclay coast from Huon Gulf to Astrolabe Bay, where they are replaced by the *asa*⁵ ceremonies. On the whole the linguistic differences presented by these coast tribes do not seem to be perpetuated in their initiation rites; *barlum* among the Yabim appears quite comparable to *asa* among the Tamo. The *asa* rites are thoroughly tribal; during their celebration a general peace is proclaimed between the districts contributing

¹ Seligmann, *op. cit.*, p. 4; Haddon, in *Science Progress*, 1894, vol. ii, p. 86.

² Seligmann, *op. cit.*, pp. 494 *sqq.*

³ *Ibid.*, p. 706.

⁴ O. Schellong, "Das Barlum-fest der Gegend Finschhafens," *Internationales Archiv für Ethnographie*, 1889, vol. ii, pp. 147 *sqq.*

⁵ B. Hagen, *Unter den Papua's*, Wiesbaden, 1899, pp. 234 *sqq.*, 259.

boys to be initiated. Besides its aspects as a disciplinary and terrorist body, the *asa* association figures prominently in the funeral ceremonies of its deceased members. Whether the Tamo retain any traces of a totemic organization is said to be doubtful.¹

The marsaba² institution, found among the natives of Sir George Rook Island (Umboi) between German New Guinea and New Pomerania, appears to be a tribal secret society, after the order of the *barlum* and *asa* associations.

MELANESIAN ARCHIPELAGO (NORTH).

The ethnography of the northern islands of the Melanesian Archipelago is still so imperfectly known that we must await future investigations to determine with exactness what relationship exists between the numerous secret associations in this region and a totemic organization of society. In the western part of New Pomerania masks and secret festivals are reported from such widely separated quarters as the French Islands to the north and South Cape (Cape Balli) on the south-western coast of the island. It is worthy of note that in the islands west of Cape Balli there are mummers who make their appearance not only at the circumcision ceremony, but also, as among the Elema tribes of New Guinea, when a taboo is to be placed on the coconuts. Throughout this part of New Pomerania the secret associations appear to comprise all the male members of a community. Circumcision and the use of bull-roarers form characteristic features of initiation as with the natives of Kaiser Wilhelm Land. Such facts have much significance as evidence for cultural contact between the two regions.³

Of the peoples dwelling in the more central parts of New Pomerania, the Sulka now on the south-eastern coast in the neighbourhood of Cape Orford are best known.⁴ The tribe is divided into two exogamous groups (phratries ?) with descent in the maternal line. Each group consists of nine branches, presumably totemic. The Sulka have many masked dances on different occasions, some possessing a well-defined totemic character and others appearing in connection with the secret association called *parol*, after the common mother of the mummers. Women and children believe the maskers are spirits of the dead. The *parol* appears to be an inclusive organization of the men with the usual terrorist activities.

In the north-western part of the Gazelle Peninsula there is an agricultural

¹ Hagen, *op. cit.*, p. 225.

² Reina, in *Zeitschrift für allgemeine Erdkunde*, new series, 1858, vol. iv, pp. 356 *sqq.*

³ R. Parkinson, *Dreissig Jahre in der Südsee*, Strassburg, 1907, pp. 638 *sqq.*, 667. In the western end of New Pomerania the words for "house" are *luma*, *bali*, the former of these terms reappearing in the *lum* or guest-house of Kaiser Wilhelm Land and the *rum seram* or clubhouse of Dutch New Guinea (S. H. Ray, "Note on the People and Languages of New Britain and Admiralty Islands," *Journal of the Anthropological Institute*, 1892, vol. xxi, pp. 6, 9; G. A. J. van der Sande, *Nova Guinea, Ethnography and Anthropology*, Leiden, 1907, pp. 145, 292 *sqq.*).

⁴ Parkinson, *op. cit.*, pp. 175 *sqq.*; Rascher, in *Archiv für Anthropologie*, new series, 1904, vol. i, pp. 212 *sqq.*, 227 *sq.*

people named the Baining whom Parkinson regards as the aboriginal population of the peninsula. Their masked dances have little secrecy. They seem to be associated on the one hand with the cult of the dead and on the other hand with agrarian rites.¹

The natives of the north-eastern part of the Gazelle Peninsula are familiar with two secret associations, the already notorious *dukduk*, and less known though more important *ingiet*.² The organizations have no connection with each other, *dukduk*, according to Parkinson, being a comparatively recent innovation, and *ingiet*, the ancient and fundamental institution. *Ingiet* may properly be described as a tribal society or inclusive association since the majority of men belong to it. Initiation often takes place when the novice is still a child if he has a father or uncle who himself is a member and who will pay the small fee necessary for entrance. Generally a number of young men are initiated together; they are taken into the bush and secluded from all intercourse with the village people. Novices receive new names and gain the privileges of the *marawot* or lodge.³ From another account⁴ we learn that *ingiet* exercises various disciplinary functions which often degenerate into robbery and murder.

There are several features of *ingiet* as set forth by different observers, indicating that the association really consists of a number of minor groups (totemic clans?), each with its magico-religious and dramatic ceremonies. Thus we are told that there are many *ingiet* societies presided over in every case by an individual who is really a magician; he is above the ordinary member and is practically the owner of the *ingiet* and its secrets. His office and knowledge are usually transferred to his nephew, sometimes to his son or brother. For a certain amount of shell-money he may sell the secrets to a stranger who then receives the necessary instruction.⁵ To much the same effect Parkinson declares that only certain persons know the secrets of the *ingiet*; such individuals may be said to possess their own *ingiet*, whose property they are. A man who has been initiated into all the different *ingiet* enjoys a high position in native society.⁶ Non-initiates are called, significantly, *a mana*. The "secrets" apparently refer to the preparation and rendition of dances and the performance of magical rites. Initiates are regarded as possessing great powers of witchcraft and are generally applied to when anyone wishes such powers to be exercised against an enemy.⁷ Public magic for the good of the community is represented by dances given in the *marawot* to dispel the influence of evil spirits; these performances have a totemic character and are participated in by a number of the various *ingiet* associations.⁸

¹ Parkinson, *op. cit.*, pp. 613 *sqq.*, 620, 631.

² The alternative name *marawot* (*moramora*) which Parkinson (*op. cit.*, p. 598) applies to *ingiet* strictly refers only to the sanctuary or lodge of the members.

³ Parkinson, *op. cit.*, p. 599; George Brown, *Melanesians and Polynesians*, London, 1910, pp. 72 *sqq.*

⁴ R. Thurnwald, in *Zeitschrift für Ethnologie*, 1910, vol. xlii, p. 135.

⁵ Brown, *op. cit.*, pp. 75 *sqq.*

⁶ Parkinson, *op. cit.*, pp. 599 *sq.*

⁷ Brown, *op. cit.*, p. 72.

⁸ Parkinson, *op. cit.*, pp. 602, 605. Graf Pfeil has described one of these festivals in the

Certain other aspects of *ingiet* are symptomatic of an underlying totemic organization. It is said that the society at large is divided into (two?) classes; whether these correspond in any way to the two classes among the natives of the Gazelle Peninsula does not certainly appear.¹ Though no particular food, animal or vegetable, is prohibited to the people as a whole, there are certain animals, such as the pig, shark, turtle, and dog, which are tabooed to members of the association after initiation.² Old members, however, are said to be less strict in observing the *tabu*, a circumstance which recalls the relaxation of the food prohibitions in favour of Australian elders. It seems reasonable to regard the taboos as restricted to the separate *ingiet* groups, for we are told that an animal absolutely forbidden to the members of a given *ingiet* might be eaten with impunity by others who did not belong to that particular group. Images (*ingiet tabataba*), of these animals are kept in a special part of the *marawot*, visited only by the head of a given group. On great festival occasions the images from several sanctuaries may be brought together and exhibited to new members.³ *Ingiet* members when sick are carried to the *marawot*, where certain ceremonies are performed. The bodies of *ingiet* men are also often laid out in the *marawot* before burial, and the initiates assist in the obsequies.⁴ The relation of the association to theriomorphic ancestor worship is still obscure. Among the aborigines of Blanche Bay, and probably in other districts, the mysteries of *ingiet* are connected with belief in a mysterious being, the *tutana vurakit* ("the eternal man"), scarcely to be described as either ghost or god. He dwells in the forest, and enjoys the power of turning himself into a bird (*Tanyptera nigriceps*), the name of which he often bears.⁵ It is tempting to conjecture that the creature is or is becoming a totemic deity.

The *dukduk*,⁶ which coexists with *ingiet* in the Gazelle Peninsula is also found in New Lauenburg, side by side with the latter association. The traditions of New Lauenburg natives declare that the first *dukduk* came to the island not many generations ago. There is some reason for believing the institution in its present form to be an importation—perhaps, from the Solomon Islands. As with *ingiet*, there are very few adult males who are not members, though boys, too, may

marawot, though incorrectly referring it to the *dukduk* association (*Journal of the Anthropological Institute*, 1898, vol. xxvii, p. 189).

¹ Brown, *op. cit.*, p. 274.

² Brown, *op. cit.*, pp. 72, 77, 273 sq.; Hahl, in *Nachrichten über Kaiser Wilhelms-Land und den Bismarck-Archipel*, 1897, vol. xiii, p. 76.

³ These images are made of stone or wood, roughly carved and painted. Many of them have human form, and all are looked upon with superstitious dread as the abode of destructive spirits (Brown, *op. cit.*, p. 76). In Guadalcanar we meet an identical practice, though here in connection with the exogamous classes of the community (Rivers, in *Journal of the Anthropological Institute*, 1909, vol. xxxix, p. 169). In Florida images of birds and fish, crocodiles and sharks, the sun, moon, and men, are kept in sacred houses, which occupy a part of the sanctuary of the *matambala* association (R. H. Codrington, *The Melanesians*, Oxford, 1891, p. 94).

⁴ Brown, *op. cit.*, p. 78.

⁵ J. Meier, "Der Glaube an der *inal* und den *tutana vurakit* bei den Eingeborenen im Küstengebiet der Blanchebucht," *Anthropos*, 1910, vol. v, 107 pp. sqq.

⁶ Parkinson, *op. cit.*, pp. 574 sqq.; Brown, *op. cit.*, pp. 60 sqq.

be entered by their relatives. Initiation, it is said, makes men of them, for the uninitiated are laughed at and spoken of as "women." The recent descriptions of the *dukduk* do not throw much additional light on its magical and dramatic activities, though there are some close resemblances to secret or semi-secret performances in Torres Straits and in British New Guinea.

The *dukduk* is also found in the southern part of New Mecklenburg, but does not appear to have spread far along the coasts of that island. Secret associations unrelated to *dukduk* are reported throughout the northern half of New Mecklenburg, as well as on the adjoining islands (Sandwich Island, Fisher and Gardner Islands). The ceremonies are said to be connected especially with ancestor cults.¹ It is in this part of New Mecklenburg that we find the natives divided into exogamous groups with birds for their totems. There are various dances in imitation of totemic birds, and the dancers who personate the bird always belong to its totemic group.² Finally, it may be noted that on the islands Tanga and Aneri, which lie off the south-eastern coast of New Mecklenburg, all the natives have totems which are animals as well as birds. No man may marry a woman of his own clan. At festive gatherings of all sorts there is manifested a considerable degree of solidarity between members of the same totem clan. Many dances are performed by masked men whom the women consider to be disembodied spirits. What connection exists in this region between the totemic system and such dramatic representations must await future elucidation. There is still much to be learned.²

MELANESIAN ARCHIPELAGO (CENTRAL).

The secret associations in the Northern Solomons are not well known.⁴ The masks found in the little island of Nissan show the influence of New Mecklenburg culture. *Kokorra* at Buka resembles *dukduk*; in the case of the *rukruk* or *burri* of Northern Bougainville the resemblance extends into details. On the island of Buka and in Northern Bougainville the people are divided into two exogamous classes, named after the cock and frigate-bird, which serve as their respective crests. In Southern Bougainville and in the islands of Bougainville Strait a larger number of birds serve as crests, and the people who have the same crest are not named after it, but possess a separate class or clan name. In Shortland Island or Alu, a recent observer speaks of the remarkable division of the natives "into secret societies or rather into totems"—a confusion, under the circumstances, almost pardonable. It appears that in the different villages, where there are usually settlements of several totems side by side, each has its own council house and its leader, who may be also the village chief. People who speak quite different languages or dialects may belong to one and the same totem. It is not unusual, even in time of war, for persons from hostile villages to go to and fro without

¹ Parkinson, *op. cit.*, p. 641.

³ *Ibid.*, pp. 652 *sqq.*

² Parkinson, *op. cit.*, p. 279.

⁴ *Ibid.*, pp. 656 *sqq.*

being killed, since their totem protects them. It is probable that the different totemic groups are distinguished by appropriate badges.¹

In the southern islands of the Solomon group the natives are divided into exogamous classes with female descent, but the classes have become more than two in number. In Florida there are, or were, six exogamous classes, five in Savo, six in Guadalcanar, and only three in Ysabel. In the latter island the three classes appear to be subdivided into smaller groups, each with its totem. Possibly these subdivisions or clans once existed all over Ysabel and the other islands where exogamy is still found. The exogamous classes of one island have their recognized equivalents in the exogamous classes of the other islands. The freemasonry existing between members of the same class, though of different tribes, impressed Mr. Woodford, who refers to the fact that natives who belong to the same "caste" can pass freely backwards and forwards between tribes at open war.²

In all the Southern Solomons each class has one or more sacred objects, which, when animals, are not generally eaten. In Florida they are called *tindalo* ("ghosts"), being regarded vaguely as the ancestors of the respective classes. As the latter are intermingled in the villages, though one of them generally includes more members than the rest in any particular district, sacrifices are offered in each village or group of villages to all the *tindalo* of the classes. In the island of Ysabel the sacred objects reappear as *tindadho*; in Guadalcanar as *tindalo*; in Savo as *manjali*. If we accept the conclusions of Dr. Rivers, the totemic system in the Solomon Islands is in a relatively late stage of development, "in which the totems and other sacred objects, including human ancestors, are all grouped together as *tindalo*."³ It accords with this generalization to learn that the *tindalo*, all of which are endowed with *mana* or magico-spiritual power, appear to be connected with the so-called secret societies in these islands, much as totems are connected with clans in other parts of Melanesia. In Guadalcanar the emblems, or *tindalo*, are said to be regarded with the greatest veneration by the people. They are kept by the elders, who by means of them become magicians, able to produce rain and thunder at will, to cause the growth of the crops, and make both pigs and babies healthy. A lad learns about the *tindalo* only after initiation. The elders guard them jealously, as "in a community where no respect whatever is shown by youth to age they are a powerful means for keeping the impetuous youth in its proper place."⁴ It may be also noted that in Florida, and possibly in other islands, the secret associations have charge of the festival of first-fruits, when the *tindalo* that preside over vegetation are propitiated.⁵ The *malambala* of Florida, which Dr. Codrington regards as another form of the *qatu*, a secret order of wide extent

¹ Carl Ribbe, *Zwei Jahre unter den Kannibalen der Salomo-Inseln*, Dresden, 1903, pp. 140 sq.

² C. M. Woodford, *A Naturalist among the Headhunters*, London, 1890, pp. 40 sq.

³ W. H. R. Rivers, "Totemism in Polynesia and Melanesia," *Journal of the Royal Anthropological Institute*, 1909, vol. xxix, p. 171.

⁴ Woodford, *op. cit.*, p. 25.

⁵ Alfred Penny, *Ten Years in Melanesia*, London, 1887, pp. 69 sq.

in the islands to the south, holds its performances when the almonds are ripe. *Bigo*, the gathering of first-fruits, is the inaugural step in the ceremonial. On this occasion the initiated from each village make bamboo structures called *tindalo*, which resemble the *qatu* masks or hats, though larger and higher. After these have been exhibited to the wondering women and children, who believe them to be the handiwork of ghosts, they are taken back to the lodge and burnt.¹ The masked members of the order, as representing the *tindalo*, are given to the same terrorist activities which characterize so many other secret associations in Melanesia.²

MELANESIAN ARCHIPELAGO (SOUTH).

The investigations of Dr. Rivers indicate the existence of a well-defined totemic system in the Santa Cruz group (Santa Cruz, Reef Island, Utupua, and Vanikolo), and in one of the islands (Efate) of the Southern New Hebrides. Among the Reef islanders, for instance, we find social divisions, *mata*, definitely exogamous, and each with one or more animals tabooed to members of the group. The men's house or *afalau* is a regular feature in this region. Each social division is supposed to have its own clubhouse, as among some of the natives of British New Guinea, but at the present time the villagers live indifferently in these houses, and do not confine themselves to one of their own division. However, "if there should be a fight, the people owning an *afalau* would drive out members of hostile divisions."³ As far as I am aware, no secret associations have been discovered in the Santa Cruz group,⁴ a circumstance which may be not unconnected with the existence there of totemism in a still vigorous state.

On the other hand, Dr. Rivers' researches did not reveal any decisive evidence of totemism in the Banks' and Torres Islands, and in the Northern New Hebrides. Considering the evidence previously presented, it is perhaps significant that here "the secret societies of Melanesia appear to have reached their highest development."⁵ Dr. Codrington assures us that they are very numerous. "In the Torres Islands alone there are a hundred of them, and every man belongs to four or five."⁶ The associations are universally called "the ghosts" (*o tamate*).⁷ In the Banks' Islands a multitude of minor and mostly local associations exist, generally named after birds. No doubt many of these are modern, since there is satisfactory evidence of new foundations from time to time. It is probable, however, that where the chief association, *tamate*, is powerful, all the members of the other societies belong also to the *tamate* and co-operate with it. Another association,

¹ R. H. Codrington, *The Melanesians*, Oxford, 1891, pp. 94 *sqq.*

² Codrington, *op. cit.*, p. 98 *sq.* ; Penny, *op. cit.*, p. 72.

³ Rivers, *op. cit.*, p. 165.

⁴ Codrington, *op. cit.*, p. 69.

⁵ Rivers, *op. cit.*, p. 173.

⁶ Codrington, *op. cit.*, pp. 75 *sqq.*

⁷ This fact led Dr. Codrington to suggest a connection of the Southern Melanesian societies with the *dukduk*, since in Santa Cruz a ghost is *duka* ; and in Florida, one method of consulting the ghosts is *patuduka* (*The Melanesians*, p. 70).

distinguished by its peculiar dance, is the *qat*, found in all the Banks' Islands, but not in the neighbouring Torres group. The *qatu* and *qetu*, variants of the *qat*, are the important societies in the Northern New Hebrides.¹ It is scarcely necessary to dwell on the totemistic features still exhibited by these organizations.²

Professor Frazer has not been able to discover any certain traces of a totemic system in New Caledonia, and doubt has been cast upon the existence of secret associations in that island. We know, however, of the *apouema*, which has some resemblance to *dukduk*, and makes an appearance upon various occasions, such as a feast of the dead.³ Further research will doubtless yield much additional information concerning this institution.

MELANESIAN ARCHIPELAGO (FIJI).

Among the western tribes of Viti Levu, which in traditions, language, and physical type are recognised as Melanesian, there formerly existed the *nanga* association. As Mr. Thomson has recently observed,⁴ it is highly probable that, in at least its known form, the *nanga* or *mbaki* was a late introduction on the island. The Wainimala tribes can name six generations since they were settled in their present home, and hence the *nanga* cannot have been brought in at the most more than two centuries ago. The rites exhibit an entire dissonance with the Fijian religious system. The sanctuary of the *nanga* association was the earthly dwelling-place of the ancestral spirits, who were represented by the elders and by some of the middle-aged men. The initiatory rites were thought to bring the youths into relations with these ancestral beings. The first fruits of the yam harvest were always piled in the *nanga* and allowed to rot there. Just as in the *ingiet* of New Pomerania, sick members of the association were taken to the *nanga* for recovery, so funeral ceremonies over deceased members, we may conjecture, were likewise held in this sacred place. We are told that warriors before entering on an expedition always repaired to the *nanga* to be made invulnerable. Such features of the association recall those of other Melanesian organizations; it is therefore doubly significant to learn that the *nanga* was divided into two groups, the *kai veisina* and the *kai rukuruku*, which traced their descent from two old men who drifted westwards across the Great Ocean and taught the mysteries to the people.⁵ The ceremonies of the two divisions differed only in minor respects, and they used in common the stone enclosure, each division holding its performances in alternate years. Though the members of one class were forbidden, on pain of madness or

¹ Codrington, *op. cit.*, pp. 86 *sqq.*, 92 *sqq.*

² In this connection it is interesting to learn that the name of the *suge* or *supwe*, an association found throughout the Banks' Islands and Northern New Hebrides, is probably identical with the Motu term *dubu* (*d* and *s* being interchangeable). Among the Motu of British New Guinea the clan clubhouses are called *dubu*.

³ Jules Patonillet, *Trois ans en Nouvelle Calédonie*, Paris, 1872, pp. 178 *sqq.*

⁴ B. H. Thomson, *The Fijians*, London, 1908, pp. 148 *sqq.*

⁵ A. B. Joske, "The *Nanga* of Viti-Levu," *Internationales Archiv für Ethnographie*, 1889, vol. ii, p. 258.

death, to reveal its secrets to men of the opposite class, we are told that a few youths of each division were initiated into both. It is difficult to regard the *kai veisina* and the *kai rukuruku* as other than representative of the ancient Wainimala phratries, which had imperfectly coalesced in one inclusive tribal organization.¹

The existence of various other secret associations in the Fiji Archipelago has been recently revealed through the researches of a Catholic missionary.² Father de Marzan describes four secret associations, of which three are said to be of ancient origin. One, called *kai buca*, ceased to exist more than a quarter of a century ago. It was found among those tribes of the interior which did not possess the *mbaki* or *nanga* rites. Initiates were recruited only from men who had reached the age of virility. The actors performed their dramatic ceremonies in the village, but made their preparations in the *bure* or men's house. The *kalou vatu* (*kaou* = god, *vatu* = stone) was so named because initiates, when possessed by the presiding spirit, became as insensible as stone. Hence the ordinary rites of the association were celebrated when the men were to go on the warpath and desired to become invulnerable. The society called *luve ni vail* is said to have been simply a dancing organization. Father de Marzan considers the fourth association, *kai nukauvadra*, of recent formation, an opinion highly questionable. With our present inadequate knowledge both of totemism and secret societies in the interior of Fiji, it is impossible to determine what relationship, if any, existed between the two institutions.

CONCLUSION.

The evidence from Australia and Melanesia would thus seem to indicate that what were once clan rituals confined to totem groups, with advancing culture have often been diffused among other clans than those which originally enjoyed exclusive control of them. The amalgamation of clans within this area has given rise to fraternities whose performances appear to be essentially the rituals of the commingled totem groups. Behind the structure and functions of the secret societies we can sometimes detect the structure and functions of totemic clans. It does not necessarily follow that the formation of secret associations in every case breaks up the earlier totemic grouping. The clans may still survive as social divisions, though no longer in possession of distinctively clan rites and ceremonies. The secret society and the totemic organization may coexist in a primitive community. It appears, however, that the extreme development of secret societies,

¹ Professor Frazer (*Totemism and Exogamy*, vol. ii, pp. 145 *sqq.*) has discussed, on the basis of Fison's account, the so-called revival of group marriage at rites of circumcision in the *nanga*. Mr. Thomson thinks that Fison was probably wrong in holding that the circumcision rite was a propitiatory measure performed when a man of note was dangerously ill. Mr. Thomson was assured by the natives that, though offerings were made in the *nanga* for the recovery of the sick, every youth was circumcised as a matter of routine (*The Fijians*, p. 157).

² J. de Marzan, "Sur quelques sociétés secrètes aux îles Fiji," *Anthropos*, 1908, vol. iii, pp. 718-728.

as in the southern islands of the Melanesian Archipelago, is to be connected with the decline of totemism as a social institution. The formation of bodies which enroll their members from all parts of the tribe, irrespective of clan ties, must contribute to the disintegration of the clan structure. Doubtless the secret society has not furnished the only factor in the situation; we need to recognize the truth that a variety of influences may react on and affect the totemic system within a given cultural area.

It does not fall within the scope of the present article to summarize the more recent anthropological researches outside Australia and Melanesia which tend to set forth in ever clearer guise the various activities of primitive secret associations as dramatic, magical, funereal, and initiatory organizations. In the light of the data already presented it becomes a plausible hypothesis that such functions are connected with an original clan totemism. The accumulating evidence from Africa and America in favour of such an hypothesis has already reached impressive proportions; but its presentation must be deferred to another time, and to another place.

THE MOHAMMEDAN SAINTS OF THE WESTERN PUNJAB.

BY MAJOR AUBREY O'BRIEN, C.I.E.—Deputy Commissioner, Punjab.

ON the question of saints in general, the Western World has become more or less sceptic as to the power of individuals within its midst to intervene between man and God, and, at most, acknowledges the existence of saints of bygone times, salving its conscience with a remark on the degeneracy of modern days in which saints are unable to flourish.

This point is not one for discussion here, but, at any rate, the inhabitants of these isles are nowadays loth to admit any spiritual superiority of man over man. Not so on or near the Indus. There, reverence is paid both to the shrines of the departed saints, to the living descendants of those saints, and to people of the present day who have the qualifications that go to make up a saint. The Mohammedans of the Indus Riverain are singularly lax and unobservant of the ordinances of their faith. Among the Balochis, for instance, it is considered in some tribes sufficient if the chief keeps the fasts and prays all the prayers on behalf of his tribesmen. Other tribes are still very much linked with the Hinduism they once professed, but all alike are sunk in the most degrading superstition, and are in the most abject submission to their spiritual pastors or Pirs. The ancestors from whom the present Pirs derive their hereditary holiness were, of course, of very many types. Some were great preachers, great proselytizing missionaries, some were notable for their asceticism, or for excessive display of certain virtues, such as generosity. The Pirs of the present day are equally varied in quality. Some are quiet hermits, others active preachers; some take a useful part in the secular affairs of the neighbourhood; some are mischievous stirrers of trouble, and some are charlatans pure and simple. But it may be said clearly that the ordinary rustic looks to them not for holy conduct but for magical powers, and it is in virtue of their supposed powers to bring good or ill that they are respected.

Of course, the outlook of the people towards them varies from place to place.

It is just as well in these matters not to look at the customs of men with the eye of the educated European or even with the eye of the educated Mohammedan, but to try to put oneself in the position of one who thinks like a humble rustic of the Western Punjab.

I have tried in this paper to reduce, as far as possible, the material taken from other sources, but I cannot resist quoting the graphic description by Sir Herbert

Edwardes of the state of Pirs and people in the border district of Bannu in 1848. He writes:—

“A well-educated man will in all probability be religious, but an ignorant one is certain to be superstitious.

“A more utterly ignorant and superstitious people than the Bannuchis I never saw. The vilest jargon was to them pure Arabic from the blessed Koran, the clumsiest imposture a miracle, and the fattest Fakir a saint. Far and near from the barren, ungrateful hills around, the Mullah and Kazi, the Pir and the Sayad descended to the smiling vale armed in a panoply of spectacles and owl-like looks, miraculous rosaries, infallible amulets, and tables of descent from Mohammed. Each new-comer, like St. Peter, held the keys of heaven; and the whole, like Irish beggars, were equally prepared to bless and curse to all eternity him who gave or him who withheld. These were ‘air-drawn daggers’ against which the Bannuchi peasant had no defence. For him the whistle of the far-drawn bullet, or the nearer sheen of his enemy’s sword, had no dangers; blood was simply a red fluid; and to remove a neighbour’s head at the shoulder as easy as cutting cucumbers. But to be cursed in Arabic or anything that sounded like it, to be told that the blessed Prophet had put a black mark against his soul for not giving his best field to one of the Prophet’s own posterity, to have the saliva of a disappointed saint left in anger on his doorstep, or behold a Haji who had gone three times to Mecca deliberately sit down and enchant his camels with the itch and his sheep with the rot—these were things that made the dagger drop out of the hand of the awe-stricken savage, his knees to knock together, his liver to turn to water, and his parched tongue to be scarce able to articulate a full and complete concession of the blasphemous demand. In learning scarcely any, if at all, elevated above their flocks; in garb and manners as savage; in no virtue superior; humanizing them by no gentle influence; shedding on their wild homes no one generous or heart-kindling ray of religion—these impudent impostors thrive alike on the abundance and the want of the superstitious Bannuchis, and contributed nothing to the common stock but inflammatory counsel and a fanatical yell in the rear of the battle.”

This opinion of Sir Herbert Edwardes is fully supported by the proverbs of the people themselves.

The dwellers on the banks of the Indus are not in quite as bad a condition as the population of Bannu; but still my father, the late Mr. E. O’Brien, I.C.S., was not far wrong when he wrote of the people of Muzaffargarh, that “their feelings of worship are entirely diverted from the Divine Being to their spiritual guides.”

And yet, though every peasant must have a Pir, few take much trouble over the selection of any particular one. In places, for instance, they are chosen by writing the names of several on scraps of paper and taking the first that happens to sink in the water into which they are thrown. Thus it is not essential that saints should be of known piety. They are approved because of their magical

powers and not for their spiritual qualities. Once selected they take good care to collect an annual fee from those who become their disciples, visiting any recalcitrance with terrible threats and abuse. Moreover, they obtain money on all possible occasions by providing charms and amulets to obtain every object and to avert every calamity. There are, for instance, charms to keep off the evil spirits and to avert the evil eye, and amulets to enable a wrestler to win his bout, or to aid a housewife in making butter.

It is a little difficult to enter into the religious beliefs of other people, especially if they are in a different stage of civilization from our own, but the general idea of our riverain folk seems to be that the Deity is a busy person, and that his hall of audience is of limited capacity. Only a certain proportion of mankind can hope to attain to the presence of God; but when certain individuals have got there, they may have opportunities of representing the wishes and desires of other members of the human race. Thus, all human beings require an intervener between them and God, and this necessity is extended to the saints themselves. For instance, I came across the biggest saint of the Dera Ghazi Khan District driving in a phaeton along a road usually unfit for traffic owing to the hill torrents, but which had been made passable for that occasion only by the exertions of his disciples. He had with him his own spiritual adviser, a saint of quite moderate rank in another district. It certainly puzzled me to see him with this smaller man; but I suppose no one must knock at the door of heaven for himself, even if he has the right to knock on behalf of others.

The idea that one must attain merit through the medium of others is not restricted to India. Only recently, Major Sykes has told us how it is said in Persia that Moses adopted Khwaja Khizar as his Pir, and was instructed by him. I cannot stop to reconcile all the legends about Khwaja Khizar, the Zinda Pir, or still-living guide, known also as Elijah, God of the Indus, etc., but the reference is very interesting because it is paralleled in the legends of Bala Shah, the Mohammedan version of Lal Beg, the patron saint of all the sweepers. This Bala Shah, otherwise Bal Mik, and formerly Val Miki, a real Hindu reformer and the poet-author of the Ramayana, was, according to the Chuhra Sweeper legends, high exalted in the court of heaven for creating the earth after calling on Khwaja Khizar to aid him.

However, this is a digression, but the fact is that the saints are a very important item in the rural economy of the Indus Valley. All the districts that border on the Indus are thickly dotted with shrines, tombs of the sainted dead; and these tombs vary in dignity from the great mausoleums of men of renown to the heap of stones surmounted by a pole and a rag of some minor beggar. And to the shrines of the saints, thousands upon thousands of devotees resort, in the hope of gaining something on the sacred soil. So far there is nothing contrary to European ideas. Shrines have existed through the ages, and pilgrimages to them have been supposed to produce various results. But there is one thing that differentiates the two areas. In the West a saint might become a saint by various qualifications—

piety, asceticism, or even, as in the Indus Valley, on account of reputed magical powers. But their virtues died with them. The saints of Europe were celibate, but the Mohammedan saints of the Indus are not. It is easy, therefore, to understand how the belief in saints has been fostered and kept alive to a much greater extent in the Indus Valley than in the British Isles.

Here, then, I must point out that among saints there is a constant battle as to the laws that govern the descent of sanctity. The eldest son, wherever possible, tries to maintain the rights of primogeniture. The younger brethren, on the other hand, argue that holiness descends according to the customary laws of inheritance, by which all share alike in the sanctity as in other forms of property. The latter win in most cases, although sometimes the eldest is accepted as the chief, the Sajjada Nashin, the Sitter-on-the-Prayer-Carpet, and is allowed small extra dues similar to those enjoyed by the headman of the village. Sanctity is so lucrative that, as in the case of other money-making concerns, disputes are frequent. Brother quarrels with brother, or an uncle of a junior branch usurps the right of a youthful nephew. Then, again, the saints near the Indus make tours round those disciples who live at a distance, and, although they try to adjust matters by dividing up their begging-beats, or by arranging that each should take separate turns, still one constantly hears complaints of the grabbing of disciples or of men going on circuit in the wrong order. As is natural, if the holy family is at all prolific, the difficulties and quarrels are largely increased, and curious consequences ensue, such as Government managing a Mohammedan shrine with the assistance of a Christian Deputy Commissioner and a Hindu revenue subordinate.

I do not wish to give a mere guidebook description of our saints taken from gazetteers and census reports, but, before passing on to accounts drawn from more personal knowledge, I will recapitulate, for the benefit of those not in touch with the subject, some of the miracles and features of the leading saints and of their shrines.

Saints have raised people from the dead, have transported pilgrims journeying to their tombs across the Indus on a prayer carpet, and have brought to life a number of kids already eaten by a band of Fakirs. There was a saint who mended the broken leg of a camel. The camel did not gain much thereby, because the King of Delhi sent for it and killed it to have a look. On viewing the miraculous rivets in its leg, he sent four mule-loads of money as an offering to the saint, but neither the camel nor its owner appear to have had any more interest in the proceedings. There was once a saint who rode on a wall with a snake as a whip, and there was another who sailed the Indus in a stone boat. If you don't believe the latter story, you will find the stone boat—on dry land—by the Indus to this day. There have been saints who could ride tigers and handle snakes, and one whose hand would occasionally come out of his tomb for forty years after his death. One rode home for some distance after his head was cut off, while another saved a boatload from sinking in the river. There was a saint who sent the river seven miles away: that is a comparatively easy job. It has recently been the misfortune of many people

to watch the Indus walk bodily across country, eating up fields, groves, gardens, hamlets and finally the town of Dera Ghazi Khan, which housed twenty-one thousand inhabitants. The same saint removed all the flies, and, if he had done so permanently, he would certainly have deserved his honours. But he brought them back a thousand-fold, and those who know what flies can be like in the East will feel that his sanctity worked on unsuitable lines. Then there was the great Saint of Multan who, unable to get firewood free from an unappreciative public, brought down the sun nearer to that city in order to broil his fish. And those who have served in Multan, or in the valley of the Indus not far from it, know well that the sun seems nearer the earth in that region than elsewhere.

Then again the Shrines of the Holy have various qualities. One is specially good at curing the bites of mad dogs, another gives success in litigation—and our peasants are sadly litigious folk. Another is good for toothache, a bath of sand near a fourth shrine will cure boils, and a fifth is useful for promotion of the growth of beards. A branch from the trees of one shrine is taken home to drive away cobras, and here I must point out that one advantage which rests in saints and their shrines is that they encourage the growth of groves of trees—distinct assets in an arid area.

One might continue this recapitulation for a long time, but this will give a rough idea of the powers of some of the holy men. They have, however, their limitations in popular belief. Thus the proverb goes: "If an ass can carry but $2\frac{1}{2}$ maunds, can Sayad Jalal make him carry five maunds?"

Then again, while saints of high degree are of value on great occasions, it is as well in less important matters to call on the name of some petty local hero:

"Inside Bahawal Hak, outside Kutb Farid;
But if you want a thing done in a hurry, call on Shadna Shahid."

That is, though the great saints of Multan and Pakpattan are great indeed, the local martyr, who may have been killed for running off with his neighbour's wife, may have more efficacy in the courts of heaven in petty matters. As a parallel to this, when a tent-pegger in Mianwali starts off on his run he makes his horse plunge forward to the cry of "Ya, Allah!" but as he thunders down close to the peg his cry changes to "Aili! Aili! Aili!" or "Oh, Ali!" The nephew of the Prophet was reputed to be a great athlete, and is therefore likely to aid in striking a peg.

It will be readily understood that people with beliefs such as have been described are ready to explain all kinds of occurrences, not understood by them, by reference to the influences of some spirit or saint. Thus the spirals of sand, known as dust devils, are supposed to contain within them a sprite known as Bhai Pheru, or Brother Twirler. This Brother Twirler has been explained as a Brahman, who became the devoted follower of the great saint Sakhi Sarwar, and was granted magical powers. So again I passed a large boulder in a ravine in the Baloch hills, which was obviously an object of reverence, and was shown the foot-

prints of the blessed Prophet—two strips of yellow sandstone in the grey sandstone rock.

In the administration of the country it is impossible to ignore the ideas or beliefs of the people or the religious personages, any more than we can disregard the opinions of their chiefs and leading men. These religious gentry, whether virtuous or otherwise, possess great influence, and in dealing with the people it is necessary to use all men of influence as far as possible to aid in the administration.

As a typical instance of how such men can be of value, I may call attention to the occasion when, in Dera Ghazi Khan, a Baloch notable in a fit of excitement carried off into the hills Captain Grey, the Deputy Commissioner of the time. He was pursued by a mixed force of soldiers and Baloch chiefs with their retainers, but it was an influential Pir who was sent forward to show him the error of his ways and who ended the matter without bloodshed.

Now I come to the more personal side of my paper, in which I will try by description of actual experiences to bring home to you more clearly our people, their beliefs, and their saints. I have used one personal note below, because actual living examples are likely to bring points home with more emphasis than if abstract cases are described.

One thing very noticeable about the saints of the Indus Riverain is that the founders of the holy places were, as Mr. Arnold brought out so clearly in the *Preachings of Islam*, mainly Shia missionaries, who came up the river by peaceful penetration. Years after there were those successive waves of conquerors, all Sunnis by faith, who bore across the Indus in various places and induced conformity with their own ideas by methods connected in our minds with Philip and Mary. But heredity counts for a great deal, and so we find that, under our tolerant sway, men of the saintly classes are constantly reverting to Shia ideas. As a rule they do not announce their change so aggressively as to alienate their Sunni disciples; but occasionally conflict occurs, especially where the secular interests of religious superiors clash with those of the laymen around them.

As an instance of this I must mention that among the Pathans of the Mianwali district Jack is as good as his master, and everyone thinks he is entitled to have a say; so one day I found a mass of men waylaying me at a railway station, where the trains stop for twenty minutes. All talked simultaneously at me, obviously desiring to inform me of something. I caught such remarks as, "He wants to starve us"; "They would kill me but for fear of your honour"; "We are dying and our children are already dead."

From this I gathered that there were two parties to the dispute, but during all those twenty minutes I never heard a coherent statement bearing on the facts, and as neither side was allowed to tell the story for more than one-half sentence at a time, and there were no outsiders present who knew about the affair the train steamed on, leaving me no wiser than before. I, of course, heard all about it later, and had plenty of trouble over it, and it appeared that the Pathan tribesmen had

granted to a Sayad family certain superior water rights which they wanted to take back because the Sayads had taken to heretical notions. Unfortunately, the rights of the latter were duly recorded in the Government records, and had been the subject of litigation, in which Mr. Longworth Dames, as Divisional Judge, had given them the support of the law; but it was very clear that but for the strength of the British power the heretics would have been ousted from their position.

The very town of Mianwali, which gives its name to the first district that I had the good fortune to hold, means the place of the holy men. Their progenitor won his name, apart from other deeds, from his power of prophecy. Not properly treated by the Saddozai Nawab of Dera, he foretold the fall of the great desert fort of Mankera into the hands of the Sikhs, and the prophecy coming true his prestige was greatly enhanced, and his descendants are able to make a fair income on the sale of amulets, breathing on the sick, and other recognised methods.

In this district, in the middle of the desert that lies between the Indus and the Chenab, I came across a tribe of graziers and camel owners who did not clip their moustaches. These in our country were obvious rarities, so I enquired of their religious beliefs, their saints, etc., and was told that they were disciples of the Mian Serai of the Dera Ghazi Khan District. I was further told that when they slew an animal for food they did not do so in the name of God, as all good Mohammedans do, but in the name of their Mian. Now you can imagine that I expected when I was posted to Dera Ghazi Khan to find that the Mian Serai was a saintly ascetic of a high order. As a matter of fact he turned out to be a very much impoverished nobleman, whose claim to greatness lay not in his piety but in his descent from the Kalhora Kings of Sind. His spiritual dignities had remained with certain classes, isolated in the desert, long after his temporal power had disappeared.

Some of those looked up to by the people as saints are, no doubt, pure charlatans, and live on the credulity of mankind. I had under me a revenue official, himself a Sayad, and had frequent discussions with him as to the impossibility of any human beings on this earth having supernatural powers beyond those of ordinary men. He of course disagreed with me, and especially wanted to show me a great Sayad, one, Bahar Shah, who, he declared, would convince me that angels, jinns or spirits aided the mighty. He told me many stories of the power this man had. The only one I can remember is, that he could send his begging bowl across the open, and, while all sat, it would come back to him from the threshing floor, full. However, as so often happens to the unbeliever, the opportunity for my seeing him never came. I spoke one day to the Deputy Commissioner of an adjoining district, a Hindu officer of distinction, and was enlightened.

“I know the man,” he said. “He is an uncommon good conjurer.”

I learnt from this Sayad Tahsildar much about the local ideas. He was filled with the sense of proportionate magical powers possessed by different individuals.

This power, which we call "Barkat," is a power that varies according to the rank and dignity of each person, and also with the special merits which he may have obtained by virtue of his descent, or his own qualities. The word "Barkat" is one constantly in the mouth. Lieutenant-Governors, whose arrival in an arid area synchronizes with rain, are more likely to go down with honour to posterity than those who have confined themselves to prosaic improvements for the benefit of millions. Well, my Tahsildar was always in search of "Barkat," and this especially applied to the irrigation arrangements over which he was in charge. The Indus has been moving westward, and, incidentally, has eaten up practically the whole town of Dera Ghazi Khan. Naturally, this westward trend caused the inundations on the east bank to fail to reach the areas they fertilized in the past, and, consequently, the works constructed by the farmers themselves from year to year, under official supervision, became of more importance. The Tahsildar was very keen constructing an enormous dam on one creek which he called after me, a minor dam and a cut which he called after himself, and other constructions named after the leading squires. I chaffed him about this habit of his, but he explained how other cuts had silted up, but that the auspicious name of Mr. S. S. Thorburn, an officer who rose to high rank in the Punjab, had kept a channel called the Thorburn Wah open to this day. I therefore let him have his way as it seemed to improve his energy, but humouring him thus led to a very severe day. One year, irrigation failed altogether, so that some sixty thousand acres in the south of the district had not had a drop of moisture by July 25th (the inundation season is from May till August). The Tahsildar therefore turned out the countryside in accordance with a plan matured by us in the winter, but postponed in the hope of a high river; and in ten days he dug a cut, one and a-half miles long, fifty-five feet wide, and four feet deep from one creek that was running to another large one which had lost its head. He cut it but he did not open it, though all the country was thirsting for water. He wrote and wired to me twice daily. I, with Mr. Bolster, then Assistant Commissioner, was enjoying a short spell of comparative cool on a low hill, and we were very reluctant to move merely for a formal ceremony. The Tahsildar stuck to his guns, and implored our "Barkat" at the opening ceremony. Distances are great and trains are slow, but after a thirty-mile road journey and six hours by rail we arrived at a rest-house. Then starting next day at 3 a.m., we rode fourteen miles to the site of the cut. Musicians and poets were there who sang and declaimed the glories of ourselves, the Tahsildar, his assistants, squires, squireens and themselves.

Then the Mayor kicked off. I mean that Mr. Bolster and I took mattocks in our hands and cut at the dam till the water began to trickle. It was then demolished amidst much praying and cries of "Dum Bahawal Hak-a-a," or invocations to the great patron saint of Multan. Any who know what July 25th means in the Western Punjab, can realize that it was of no use to attempt to go back in the heat, and we had to lie up all day in a squireen's house. He did his best to make us comfortable, but when, after pushing forth in the comparative cool of

six p.m., we did our journey back to the rest-house, we were weary folk. Still the "Barkat" came off because there was a strong scour from creek to creek, and the cut that was christened by the auspicious name of the Bolishter Wah after Mr. Bolster, not only saved the situation that year, but continued to be of value as long as we knew it.

I discussed more than once with this officer the necessity of having a Pir or Murshid, a spiritual adviser, a guide to the right path, etc., and pointed out that if the Deity was All-Knowing, All-Powerful and Omni-Present, He could have no need for any intermediaries. After arguing for some time, he hit off an idea which he thought would appeal to me.

"Sahib," he said, "you are the Deputy Commissioner, the Head of the District, and all local affairs are in your hands. In order to know everything and to superintend everything, you have to be very busy. I am fairly high among your subordinates, but even I cannot invade your room at any moment. I have to go to the doorkeepers, and they lead me to your presence if you are at liberty."

The argument may not appeal to all, but it is easy to understand. It may also account for the neglect that is often shown to the moral qualities of holy men. Doorkeepers may be, and very often are, very corrupt lictors, but as leaders to the threshold of the Deputy Commissioner they must be taken as they are. So if men, either in themselves or through their ancestors, have the reputation of being mediators before the throne of God, what matters their personal conduct as long as their power is supposed to remain? Another view of the same idea is that these saints are windows through which the light of heaven shines, and, even if windows are sometimes dirty, ordinary mortals must be content with such light as they may get through them.

It is extraordinarily hard to realize the position of these holy men, and yet they cannot by any means be left out of account. Wearied once beyond measure by the incessant squabbles of a trio of holy brothers, who were battling over the eternal question of the supremacy of the elder, I asked the chief, who with his tribesmen was a disciple of theirs, why he did not throw over the lot who, in the quarrels, had revealed most unsaintlike characteristics. He admitted all their shortcomings, but said, "How can I give up those whose ancestors were guides to my ancestors?" Somehow or other, these men, virtuous or non-virtuous, had acquired for him and most of his tribe, hereditary rank as doorkeepers to heaven, and they will continue to retain that rank until the sanctity becomes quite dispersed, or to use the other metaphor, till the window is so obscured as to let through none of heaven's light. On the other hand, there were those who told me that the old chief, by no means a pattern of all the virtues himself, fostered the disputes among his saints to prevent them from attaining too much power within the tribe.

The town of Dera Ghazi Khan, an important place near the Indus, has been entirely washed away by that destructive river. It was interesting to listen to the townspeople as the river approached. They all hoped to be protected by various

holy places. "Shah Husain will turn it back." "It has come to salute the Kazi and will then return." When the Kazi's house was gone, some said, "The Kazi was a bad man. Now it has eaten his house it will be satisfied." For the Hindus, the Temple of Shiv was to work the necessary marvel. But shrine and temple, Kazi and Gosain, have all been dispossessed and no miracle ever took place.

I asked, one day, of one of my principal subordinates in Mianwali whether he knew of any miracles that had happened in recent days. His answer was that a squireen of the Mianwali district was crossing a creek of the Indus on his way to the great Shrine of Taunsa in the Dera Ghazi Khan District. His pony sank in the yielding mud, but, as he was thrown off by the plunging animal, he cried to the saint to help him. The lightened animal once his weight was off, scrambled through all right, and the man went rejoicing towards the shrine. Ferrying across the Indus proper, he was no doubt not reticent, and when, after a rest, he presented himself at the shrine, he found the holy man with a bandage on his hand.

"Oh, Mahmud Khan!" he said, "it was well you called on me. I placed my hand under your horse's hoof, and, despite these injuries, I saved you."

My informant and the countryside seemed to have quite accepted the miracle, and I did not ask him why a man able to stretch his hand eight miles need have been hurt at all.

I came in conflict with the reverend gentleman in charge of the shrine referred to in the story just given. He had taken an active and offensive part in local affairs, and was generally making himself a nuisance. The method by which I showed displeasure was by refusing to visit the shrine of his ancestor when I passed next time on tour. Many emissaries, including two Baloch chiefs, came to me to point out that even lieutenant-governors always visited the shrine and its custodian. My answer was that holy men were holy men, but that gentlemen who interfered in secular matters should call on the head of the district. I went away and the rebuke told. For some time he behaved very well, and on my next visit he paid me a call. I gave him a friendly piece of my mind, visited his shrine, and thenceforward we were on fairly good terms.

It was in his house that I saw a scene that brought home realistically to me the position of these men. As I turned the corner of the verandah, I saw a very plump, overfed son of the holy man, whose sprouting beard was being stroked by a wild Pathan of the most uncivilized type. The lad lounged on, quite unconcerned, but the Pathan clung to him, stroking his back or beard and was obviously in the hope that "some virtue might come out of him."

The saint was a queer admixture of luxury and humility. He always spoke of himself as "This mean one," "This beggar," or, for effect, "This servant of the threshold of God." He had, however, a magnificent house and ostentatious garments. The provision of this was supposed to come miraculously, as also the food with which pilgrims were fed on a standard dietary for each different day. But, of course, as every pilgrim of any status left generous gifts behind him, there was not much miracle.

I was, unconsciously, the cause of loss to this saint, because, at the request of a family of Pathan chiefs of Mianwali, I took over the management of the estate of one of them under the Court of Wards. While this gentleman would never pay his debts, he had the habit, among other extravagances, of sending whole boatloads of grain to this very Pir. Naturally, therefore, when Government managed his estate these benevolences ceased, and attention was paid to reducing debt.

The greatest shrine in the Western Punjab is that of Sakhi Sarwar in the Dera Ghazi Khan District. This is situated in the most desolate situation imaginable. It requires a journey across a desert to reach it, and lies against seamed and fissured barren hills. Although the shrine is that of a Mohammedan saint, the sanctity of the spot must date back long before Mohammedanism. On no other grounds can the cosmopolitan beliefs professed there be accounted for. Men, women and children, Sikhs, Hindus and Mohammedans alike, come from all districts in the Punjab. There are traditions to suit each, and all are welcomed by the Mohammedan servants of the shrine. These include a company of old women who represent the wife of the Holy Man, and collect from the female devotees. I will not, however, dwell much on Sakhi Sarwar, although he is the greatest personage of the Indus Valley, because so much has been written about him already, but will conclude with a description of the shrine of Lal Isan at Karor.

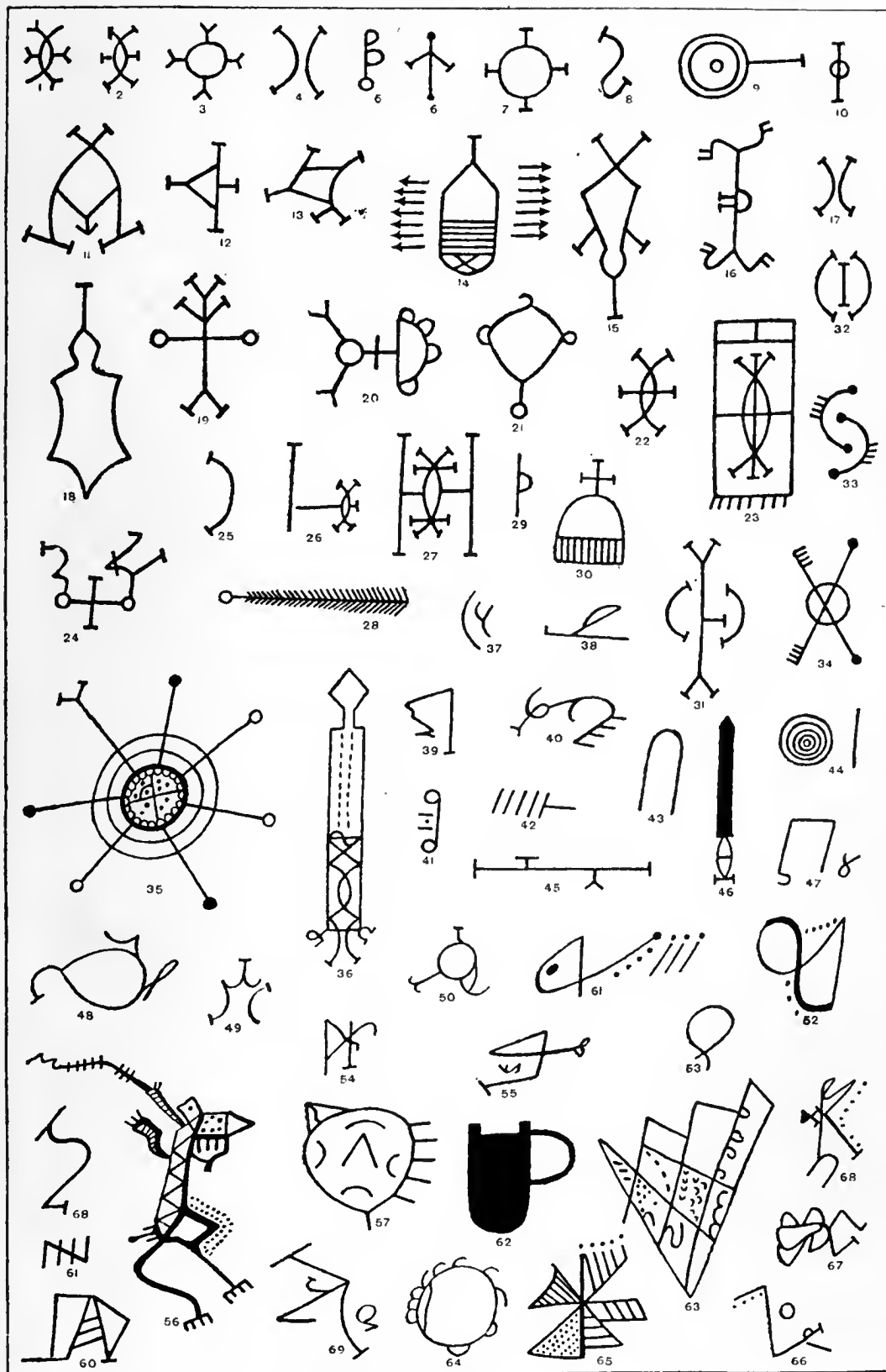
It was of this mausoleum that I was the trustee and manager on behalf of a company of squabbling modern descendants of a saint who obtained name and fame in the Middle Ages.

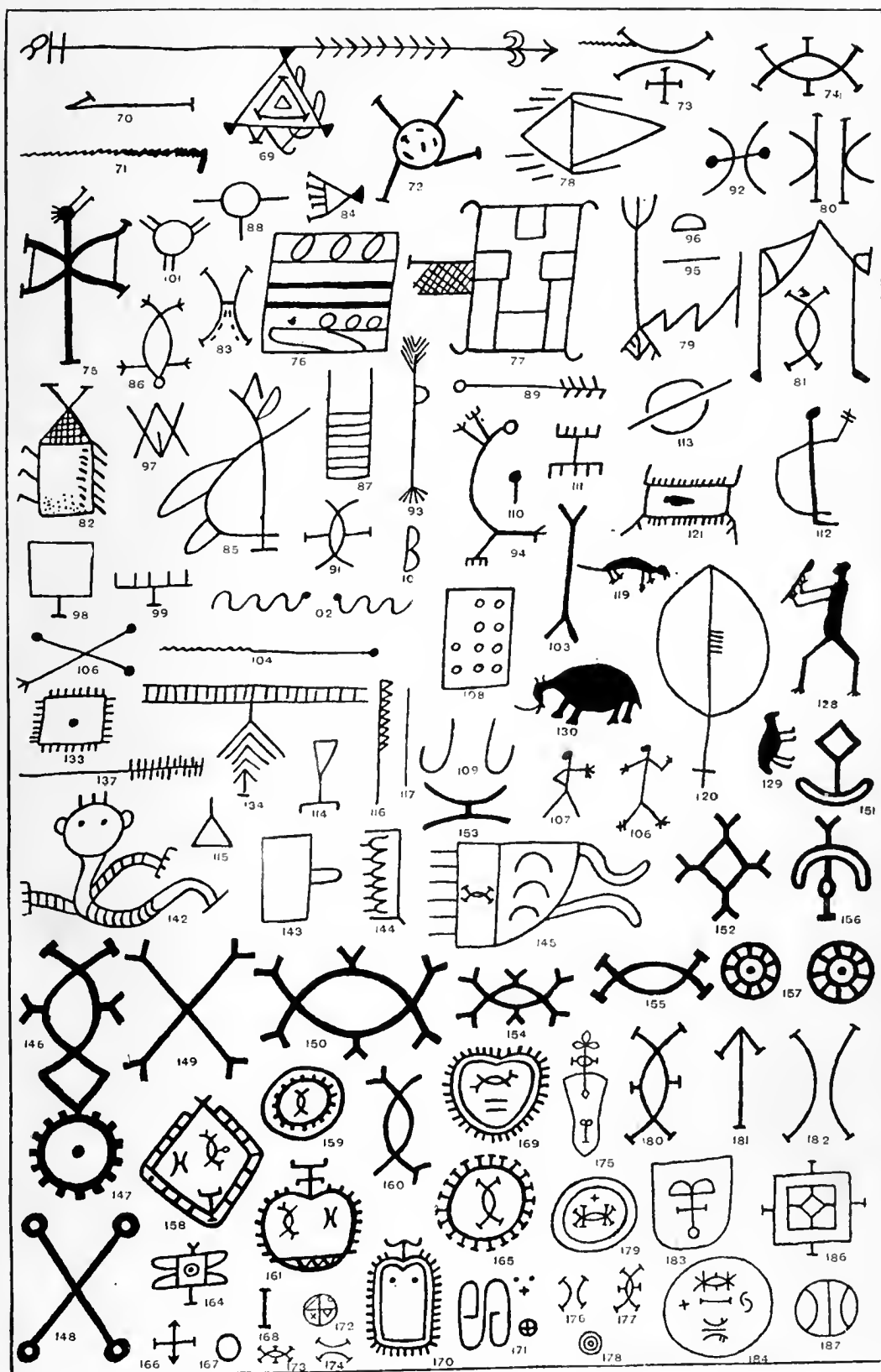
The Urs, or the Accession of the throne of God, that is, the death of this Holy Man, took place, unfortunately for district officers, in August. In that month people from all the districts round repair to the shrine for a full week's picnic. The main object is, of course, religious. They come to vow or repay their vows, and to perform various ceremonies on the holy ground. Little children are brought that their first hair may be shaved off, and, wrapped in the skin of a sacrificed goat, be buried as an atonement for the life of the child. Barren women come with toy cradles to pray for children. Mothers bring gifts in return for the inestimable boon of male offspring. Men hang up bolsters in the hope of obtaining wives by purchase, theft or otherwise, and others hang up bolsters with prayers to the saints to aid them in retaining the women they have abducted, and bolsters are also brought by women in prayer or thanksgiving for children. In like manner cowbells are suspended from the trees near the shrine by various persons; persons who have recovered lost cattle, or those whose cattle have been cured of disease, come along with thieves who have managed to steal cattle already, or who are hoping to bring off a successful coup. In fact, it may be said that all that makes up the life of our peasants forms a possible cause for a visit to the shrine.

A great feature is the casting out of devils in the name of Apollos. It is mainly the women that become possessed of devils, though occasionally a man is taken that way also. The method of exorcism entails much rocking of the body in

time to the beatings of a small drum until exhaustion and the holy ground combine to do their work. There is a good deal of humbug about this, and, indeed, it is known by the expressive term of "playing at jinns," the genii or familiar spirits of the Arabian Nights. A visit to a fair is a great event in a woman's life, and if she thinks she is not likely to get permission to go, she is apt to invent a jinn that must be cast out.

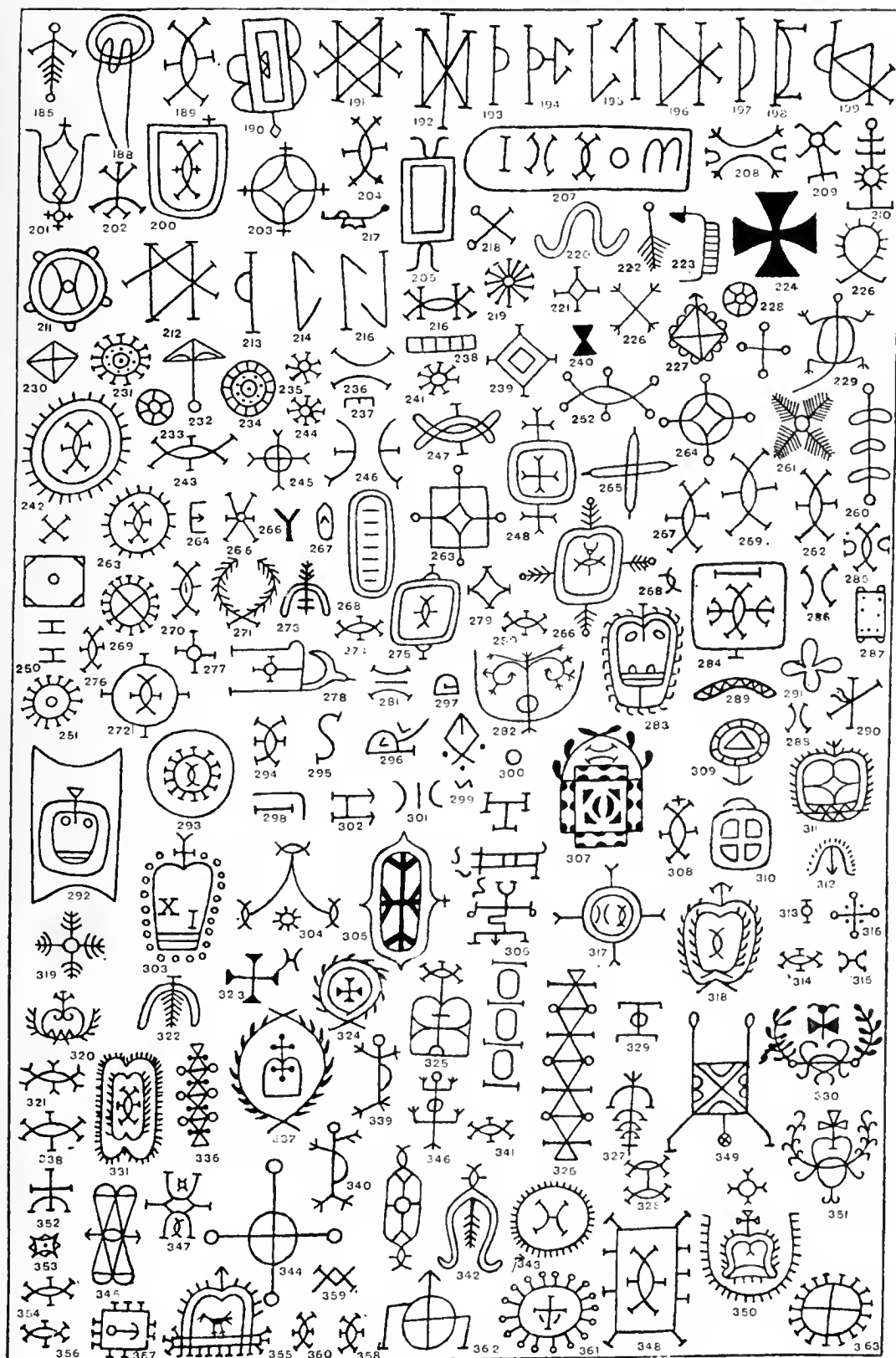
The fair here, as elsewhere, is the occasion for all kinds of sports beloved of the countryside—racing for horses, donkeys, camels and men, and, finally, a magnificent game called *doda*, a kind of hare and hounds, which is watched by some twelve thousand enthusiastic spectators, all male. It is a game which Rugby footballers might well train on, but I must not wait to describe it here. I will therefore conclude with the hope that I have given a rough idea of one phase of the religious beliefs of the people among whom I have lived so long.





FURTHER NOTES ON 'NSIBIDI SIGNS.



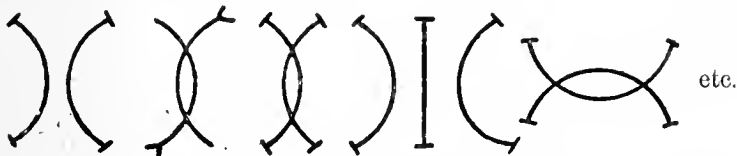


FURTHER NOTES ON 'NSIBIDI SIGNS.

FURTHER NOTES ON 'NSIBIDI SIGNS WITH THEIR MEANINGS
FROM THE IKOM DISTRICT, SOUTHERN NIGERIA.

BY ELPHINSTONE DAYRELL, District Commissioner, F.R.G.S.

In studying 'Nsibidi in the Ikom District of Southern Nigeria it will be found that there are several different kinds. The various societies which play 'Nsibidi have many of their own partieuclar signs, which strangers belonging to another society would not understand. There are, however, a large number of signs common to all the societies, such as :—



which are known to most of the natives ; these are the signs which are most often tattooed on the face, arins, and legs, etc., of the people.

The men who understand 'Nsibidi are very reticent about giving any information on the subject, and it is only through natives whom I have known several years that I have been able to obtain the signs now given. When the signs are being explained the men are most partieuclar that no other natives should be near for fear they might tell other people. The young men are also afraid that they might be fined or punished by the chiefs of the society if they were found giving information to strangers.

In the Ikom District women are not allowed to know 'Nsibidi, as may be seen on referring to sign No. 118, which represents an 'Nsibidi chief who went mad and was tied up because the members were afraid that he might tell the women or the strangers the secrets of the society. One of the very few women whom I have come across in the district who knew the meanings of any of the signs is a singing and dancing girl, of Okuni, called Ennenni, who is also well versed in native folk-lore, and has related to me several stories. The members have a seeret pantomimic code by which they can communicate with one another. It is acting in dumb show, the fingers, hands, and both arms being used, also the head. The way many of these signs have been given to me is as follows :—The

sign having first been drawn, one member points at it with the index finger of his right hand, but does not speak. The other member then points at the sign with the first and second fingers of his right hand, remaining in that position with his arm out for a few seconds, he then proceeds to make different motions with his hands, etc., explaining the meaning of the sign to the other member. This goes on for a short time in silence until the interpretation is complete. The first member who pointed at the sign then translates the meaning. This performance is repeated after each 'Nsibidi sign is made.

Bets are frequently made about 'Nsibidi, and many of the signs have reference to strangers who have broken the 'Nsibidi laws, and who have to pay goats or gin. In the year 1909, the Rev. J. K. Macgregor, B.D., published an article in the *Journal of the Royal Anthropological Institute*, giving ninety-eight signs of 'Nsibidi with their meanings, several of which are similar to some of those collected by me. There does not appear to be any stigma attached to a knowledge of 'Nsibidi in the Ikom District as would appear to be the case in Calabar, according to Mr. Macgregor, and this is probably because 'Nsibidi is so intimately connected with the Egbo society. The other societies which use and practise 'Nsibidi in the Ikom District are the Ukpotio, Ukwa, and Isong Esil societies. In trying to trace 'Nsibidi, and to find out in which countries it is known, I have recently collected and copied from various natives a number of 'Nsibidi signs mostly depicted on women. These signs are tattooed on natives from countries extending from the German Cameroons on both banks of the Cross River, down as far as Akunakuna on the left bank, and inland for a considerable distance into the Ibo country on the right bank.

The following is a list of the various countries showing whence came the natives who bore the tattooed marks reproduced by me :—

<i>Country.</i>			<i>District.</i>
1. Efik	...	...	Calabar.
2. Enfitop	...	...	Ikom.
3. Attam	...	...	Obubra.
4. Olulumo	...	...	Ikom.
5. Inde	...	...	Ikóm.
6. Indem	...	...	Obubra.
7. Ibo	...	...	Bende.
8. Akunakuna	...	...	Afikpo.
9. Inkum	...	...	Ikom.
10. Adda	...	...	Ibo tribe.
11. Injor	...	...	Ekoí tribe, Ikom District.
12. Akparabong	...	...	Ikom.
13. Abu	...	...	Boki tribe, Ikom District.
14. Ogada	...	...	Obubra.
15. Akam	...	...	Ikom District.

Many of the signs reproduced are connected with one another, and form short stories. When these signs are drawn by the natives they are grouped together, but in no regular order, and their positions relative one to another do not seem to alter their meanings.

The only exception that I know is the sign No. 155, which represents two women sleeping together, if, however, this sign were upright, it would mean a man and a woman.

It will be observed that the signs Nos. 118 to 141 are of a much more elaborate and pictorial design than those given by Etima, a Calabar man (Nos. 33 to 85). They are also quite different from the fifty-five signs which were collected by me and published in *Man*, August, 1910, Vol. X, No. 8. The native, Insoh Agara, of Okuni, who gave the signs Nos. 118 to 141, is well versed in 'Nsibidi, and is also an expert in the secret pantomimic code of communication. I have on several occasions watched this man, unnoticed by him, conversing, apparently freely, with other members of the society, who understood the code, for several minutes together.

Sign No. 61, representing five rods, in 'Nsibidi, is quite a common sign on the Cross River, and it is frequently to be seen in native houses marked up many times on the walls in white chalk, representing so many cases of kernels or bottles of gin, etc. This sign is also used on the steamers on the coast for tallying goods.

The signs Nos. 191 to 199 are very much like the signs Nos. 212 to 215, tattooed on an Inkum woman. As these signs are so different from those commonly in use in the district, knowing that the Inkum people are not related to the Ibo, I asked the woman if she could explain the reason, but, unfortunately, she could give me no information, except that she did not know any Ibo man and did not understand the meaning of the signs.

All the signs have been very much reduced in size, and the lines should be of a uniform thickness.

On the 27th May, 1911, whilst visiting the Inde country, an old woman, called Abbassi, informed me that she knew 'Nsibidi well, and explained the meanings of several of the signs to me. In order to prove that she knew 'Nsibidi, without being asked, she went outside the rest house and shortly afterwards returned with her hands crossed behind her. She stood in the doorway without speaking or moving for a short time, and then looked slowly round the room, moving her head from the right to the left, she then turned round and left the room. When she returned she told me that the meaning of her acting was that if she had had the 'Nsibidi medicine in her mouth and many people had been present in the room, some of whom knew 'Nsibidi, those people would have greeted her and she would have returned their greeting without speaking. She also informed me that had she wished to speak to any man present who knew 'Nsibidi, that this particular man would have got up and followed her out of the room, although she had not spoken or made any signal as far as could be seen. She said that

when the man followed her out of the room all the people who did not understand 'Nsibidi would have been very much surprised. It is extremely doubtful whether this old woman would have given me any information about 'Nsibidi but for the fact that she had known me for over nine years.

1. A young man and his sweetheart.

2. A man and woman sleeping together, the woman was the wife of another man.

3. Four men who caught the man and woman in No. 2 sleeping together. The woman belonged to one of the four men. And the man who was found with her had to bring a calabash of tombo, represented by the circle, and repay the bride price to the husband.

4. A man and woman in bed who are tired of one another, lying back to back, it is the usual sign of a quarrel. When a woman makes this sign for a man it means that she does not want him to come to her house again.

5. Bush leg irons.

6. The man who put the leg irons on the woman.

(Explanation of signs 4 to 6. The woman in No. 4 would not allow the man to have connection with her, so he sent the man in No. 6 to put the bush leg irons, No. 5, on the woman.)

7. Three women and one man. One woman was old and her husband wished to get rid of her, and would not give her food as he wanted a young girl to live with him. The old woman therefore called her two friends to meet the man and settle the palaver.

8. A man and a child. A stranger had come to the house, so the man told the child to go to the place where he kept his yams, No. 9, and bring some. The child refused to do what he was told so the man knocked him down.

9. The small circle in the centre is the place in the house where the yams were kept, and the long line represents the stranger.

10. The Egbo dress.

11. A man married two wives, he was fond of one of them who had a child by him and lived with her, entirely neglecting the other woman and treating her very badly. This woman having a pain in her knee went to a lot caster who told her to sharpen a stick and pierce her knee with it. When she had done this a child came out of her knee and the woman took the child to her friends in the town. When the woman's husband heard of the birth of the child he asked the woman who had given her the child, as he had not had connection with her himself.

12. The man said to the mother of the child, if this child is mine let him go to the thunder and get me an elephant's tusk. The child went and met a sick woman in the ferry boat. She told the child to wash her back, and the child did so. She then told him to wash his hands, but he refused and rubbed his body instead. The woman then told the boy not to salute any chiefs, but to walk straight on until he met the thunder, whom he must salute.

13. The boy told the thunder that his father had sent him to get an elephant's tusk. The thunder gave him a tusk and told him to stay where he was. The boy said he would sleep with the goats that night, but he slept with the slaves instead. At night the thunder killed all the goats and thought that he had also killed the boy, but in the morning the boy told the thunder that he had slept near his head and had nearly been killed.

14. The boy started home with the tusk and a gun on his shoulder. The thunder made lightning six times, trying to kill the boy, and each time the lightning came the boy fired his gun, the last shot cut the thunderer's head off so the boy carried the head and tusk to his father and told him what had happened. The father still wished to kill his son, so he got seven spears and told his son to do the same. He then called all the people together and in their presence threw all the spears at his son, but could not hit him. The boy's last spear killed his father; then the boy, having killed his father, climbed up a long rope into the sky.

(Signs Nos. 11 to 14 were given by Agbor of Abia, who pointed out the various parts of the signs with their meanings as he told the story.)

15. A fan which is used to remove the dust from the place where the 'Nsibidi is put.

16. The half circle is the place where the tombo is poured on the ground. One of the strokes opposite is the man who poured out the tombo, the other stroke is the man who drank it.

(The line in the middle is the centre with two chiefs sitting at the top and two at the bottom.)

17. A man and a woman sleeping together who have had a quarrel.

18. Fan used by the Orbon Society in their plays.

19. A man holding the Egbo stick. The man on the right is holding two goat's horns in his hands. The man on the left says he is not holding them properly and wants to take them from him, but is not allowed to do so. The top fork is the forked stick which is used in the Egbo play to push a man's legs with.

20. The half circle, etc., on the right is the Orbon rattle. The cross is the man holding the rattle. The sign at the bottom of the circle is a man who knows the Orbon play well. The sign on the top of the circle is a man who does not know the play. The circle is the mark made by the man who understands. When the man has placed his hand twice upon the mark, he is told that that is the Orbon sign.

21. The Egbo tortoise.

22. A man and woman sleeping together with their arms round one another.

23. A man and woman sleeping together on a native bed, it was very hot so they put their arms outside, the short strokes at the bottom are the legs of the bed.

24. A woman had a baby by her husband. He got tired of her and told her to go into the bush and leave the baby with him, but she refused to do so.

25. A woman went out walking and a man followed her.

26. The man met a small boy with a small girl and tried to take the girl for himself, but the girl feared to go with the man and held on to her boy lover.

27. The boy kept the girl as his friend until she grew up. He then married her and they lived together and made their bed with a pillow for the head and feet.

28. He joined the Egbo Society and put the head-dress near the bed so that his wife could see that he belonged to the society.

29. A gun.

30. The cross at the top is a man who went into the bush carrying his gun, another man went with him who carried his bag.

31. A man and his friend went into the town to get two girls. One of the men got a girl and took her home with him. The other man could not find a girl, they therefore parted and went different ways.

32. A man and a woman sleeping together. The woman did not like the man to be near her so she put a pillow between them.

(Signs 1 to 32 were given and explained by Agbor, a native of Abia, Ekoi tribe.)

33. A question by the Egbo Society. When this sign is made on the ground it means that rum is required, and the man who makes the sign with the four small strokes is high up in the Egbo Society.

34. The circle represents a table in the Egbo house with a bottle of gin on it, and the crossed lines show the way a man walks in the Egbo house when a question is asked; he cannot walk straight. The two round balls at the end of the lines are the particulars about which the question is asked by a man high up in the society shown by the four small lines.

35. When this sign is made on the ground it is covered with a cloth, and no one may lift the cloth unless they understand Egbo. The sign means a man's heart. The man stands with his arms spread out to show that he knows more about Egbo than any other man. The dots represent the blood in the heart.

36. A man standing with his feet crossed. The dotted lines are the blood, bones, hair, etc. The sign at the bottom on the right is the man's testicles and the sign on the left is the penis, the sign on the top is the man's head and neck.

37. The 'Nsibidi sign for welcome.

38. A man bending down, when the Egbo is playing, with one hand on the ground and one foot behind. The attitude of a man starting to run a race.

39. A watchman who prevents anyone who does not belong to the Egbo Society from entering the Egbo house while the play is going on.

40. This sign is sent by a man playing Egbo to someone who has called him. It means that he cannot leave the Egbo house.

(The signs 33 to 40 were given to me by Etim, a native of Calabar.)

41. A pair of Egbo handcuffs and two men who have had a quarrel. A chief is in the middle.

42. Plantains and the knife with which they were cut.

43. A rod.

(Signs 41, 42 and 43 together mean: Two men had a quarrel and called for the handcuffs. The chief came and said that the handcuffs were not to be brought. He then told his wife to cook some plantains for the men. The man who was in trouble got a rod to give to some one to teach him 'Nsibidi. He gave the rod to the chief.)

44. The 'Nsibidi Egbo drum and the stick which is rubbed round on the top of the drum and causes a curious noise.

45. Four men playing with the 'Nsibidi stick.

46. The 'Nsibidi knife.

47. The Egbo looking-glass and a man who does not understand Egbo.

48. (a) A man came from a far country.

(b) A man holding up his hand.

(c) When the stranger saw this sign he knew that it was 'Nsibidi.

49. A woman who ground up 'Nsibidi medicine.

50. The 'Nsibidi medicine.

51. Leaves and other things forming part of the medicine.

52. The large stone for grinding up the medicine (the mortar).

53. The small stone held in the hand for grinding the medicine (the pestle).

54. The man keeps the medicine.

55. A man who asked the owner why he kept the medicine.

56. This is the 'Nsibidi dressed like an Egbo with a netted dress. He holds a whip in his right hand. When the woman was asked for the medicine she would not give any answer until the 'Nsibidi came. The 'Nsibidi then made the next sign (57) on the ground.

57. When the woman saw the sign she would not answer. (a) The rods; (b) the gin; (c) the legs of the table; (d) the three 'Nsibidi sticks.

58. The glass out of which to drink the gin.

59. This sign was sent round to say that the 'Nsibidi Society would play on a certain day.

60. The messenger who was sent to tell the people, but as he did not go quickly and stayed away he was fined five rods.

61. The five rods the messenger was fined.

62. The 'Nsibidi drum which was played at the meeting.

63. The 'Nsibidi box which holds all the medicine and dress and other things belonging to the society.

Explanation.—A stranger came from a far country and wished to attend the 'Nsibidi play but he was not a member of the Egbo Society. A woman was told to grind up the 'Nsibidi medicine consisting of leaves, etc., in a stone mortar with a stone pestle which she held in her hand. When she had ground up the medicine

she gave it to a man to keep. Then another man asked her why she kept the medicine, but she would not answer so he went to the 'Nsibidi who made the sign representing the rods, gin, etc. (and the glass out of which the gin would be drunk), which the woman would be fined if the medicine were not forthcoming. A messenger was then sent round to all the members with the sign showing that a meeting was to be called. As he did not go quickly and did not return for the play, he was fined five rods. The play was held and the drum was beaten; after the play was over, all the medicine, the dress, and the other things belonging to the society were collected and put back in the 'Nsibidi box.

(Signs 47 to 63 were given and explained by Etim, a native of Calabar.)

64. A round roll of native cloth placed on the head when carrying loads.

65. Egbo fan.

66. 'Nsibidi name written.

67. The frog which is always calling people.

68. A guard outside the door of the Egbo house to keep strangers away.

69. (a) The centre beam of the Egbo house, the short strokes being the rafters.

(b) The Egbo bell.

(c) The carving at the ends of the beam.

70. A hooked stick for gathering native pears.

71. A stick carried by members who belong to 'Nsibidi.

72. A large leaf used for putting native pears in, to carry them to the house.

73. A man with his arm out, sleeping with his back to a woman. The cross below being a small native bed.

74. Two women sleeping together with pillows on either side, with their arms round one another. If this figure were upright it would be a man and woman.

75. A carved piece of wood placed firmly in the ground near the entrance of the Egbo house, it is decorated with camwood and yellow wood and tie-tie, it has also a red cap on its head.

76. Six 'Nsibidi leaves which were placed on the path by two men. The two broad lines in the centre are the two men.

77. An Egbo table. The crossed lines are pieces of tie-tie which the members throw from one to the other. The hooks at the corners are the handles.

78. A hollowed out piece of wood containing medicine. The triangle on the left is the cover. The strokes on the side are sticks which are used for sprinkling the medicine about.

79. A messenger who was sent to the two men in the story.

80. The two men standing together talking.

81. A big chief died and was held in the arms of his friend. His body was then placed in the grave, which is represented by the outside lines, and the 'Nsibidi himself went to bury the chief.

82. A woman in the fatting house, with a looking-glass on the wall, with a camwood frame.

83. The fat woman sleeping with her man, back to back, he does not have connection with her. The six small dots are the chalk marks on the woman's face.

84. The fat woman's hand with which she made the next sign.

85. The place where the fat woman washed and the gutter where the water ran away.

(Explanation of signs from 76 to 85, including Nos. 72 and 74.) (76) Two men took six 'Nsibidi leaves and made them into different shapes so that each man should know his own leaf. These leaves were to tell the people to come to the 'Nsibidi play. The leaves were placed in the road and when the six men returned from the farm they each took their leaf and went to the Egbo house. (77) Then the pieces of tie-tie were handed about from one member to the other, and (78) the members were sprinkled with the medicine out of the box with the sticks. (79) A messenger was then sent to one of the two men in (80) to ask why the native pears in (72) had been picked before they were ripe, so the man, to whom the messenger had been sent, left his friend and ran to the woman in (74), who had picked the unripe pears and was going to beat her, but she ran away and slept with the other woman in (74). There was a strong law that no one should play with the table in (77), unless he were a member of the society, but one stranger did play with it. Then the chief in (81) died and was held in the arms of his friend. So the 'Nsibidi called all the members together and attended the funeral of the chief himself. A new law was then passed that no one should play with the table in (77) until another chief had been appointed. (82) There was a woman in the fatting house who had a looking-glass, framed in camwood. She told the man she was going to marry, that if she had not been in the fatting house, and in consequence was not allowed to go out, that she would have gone to the funeral of the chief. (83) She slept with her man that night, but he did not have connection with her. They slept back to back, and in the morning after he had left her she went to the place to wash, but she found that the place where the water ran away was dirty, so she made the two signs 84 and 85 on the wall to let her man know that the place was not clean. The man then cleaned the gutters and when he met the woman again at night said to her: "Since you have been in the fatting house I have always been with you, and have looked after you properly without having connection with you, and after we are married I want you always to live with me and never to go to any other man.

(The signs 64 to 85 were made and explained to me by Etim, a native of Calabar.)

86. The body of a dead chief lying on a platform at the top of a ladder with a fire underneath.

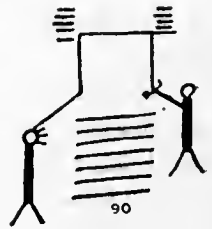
87. The ladder leading up to the platform. The chief's wives sat round the body with fans to keep the flies away.

88. The circle is the fire placed under the dead body to smoke and preserve it, and the three strokes are the sticks making the fire.

89. A bamboo stick with the leaves turned backwards. This sign was sent to a stranger in a far country so that he might know that the chief was dead.

(Signs 86 to 89 were given and explained by Odidi, a native of Okuni.)

90. The hollow square is the path leading to the bush, represented by the five small strokes on each side. The two figures on the right and left are two men who are touching two pieces of wood fixed upright in the ground on each side of the path. When a man who understands 'Nsibidi sees this sign he takes seven steps forward and then touches the post.



91. Two men who had many secrets which they spoke about together when alone, but they were not allowed to tell anyone else as the secrets belonged to the society. But at last one of the men told the secrets to everybody so he was not trusted with any more and it was determined to watch him. Although these two men were great friends and always gave one another food, one day the man who had told the secrets refused to give his friend food, so he made up his mind to poison him, he therefore placed poison in his food which killed him.

92. This is the two friends who have quarrelled, showing the poison given by the man to his friend. The poison is represented by the two round balls.

93. A tree with a bees' nest containing honey. The bees' nest is represented by the half circle on the right hand side of the tree.

94. A man who tried to take the honey from the nest, but the bees came out and stung him, which caused him to bend backwards with the pain of the stings.

95. The man then got a burning stick and set fire to the tree, and when the bees had been smoked out, he gathered the honey which he placed in,

96. A calabash and took it home.

(The signs 90 to 92 were made and explained by Ogoji, a native of Okuni, and signs 93 to 96 were given by Odidi, of Okuni.)

97. A man and woman sleeping together with their legs crossed over one another, the woman was underneath.

98. She asked the man to give her a looking-glass so that she could see herself.

99. She also asked the man to give her a native comb.

100. Native handcuffs. The man told the woman that he was so fond of her that if she slept with any other man he would put the handcuffs on her.

101. A spider which was sent on in front by the 'Nsibidi members to a town where they were going to play. The spider was told to spin his web so that if anyone touched it, the members would know that the person who did so did not understand 'Nsibidi.

102. Two snakes, one on each side of the road, so that if a man had two hearts (*i.e.*, if he had a bad ju-ju and wished to kill any member of the society) one of the snakes would bite him and he would die.

103. The head chief of the 'Nsibidi Society, standing up with his arms and legs spread out so that no one could pass unless they belonged to the society.

104. A long snake. This chief asked a stranger who came to see the play if he understood 'Nsibidi, and the stranger said that he understood, but he told a lie, so the chief left the long snake in front of him. The chief also told the stranger that he must kill a goat for the members to eat, as he had broken their law.

105. The stranger killed the goat with the stick with knobs at each end. If he had taken the stick with the fork at the end it would have got hung up in the bush.

106. A stranger who came to see the 'Nsibidi play, but he did not belong to the society.

107. The owner of the ground who told the stranger not to go to the play. This caused a quarrel and the stranger said, "I am a man and insist upon seeing the play, you are no better than I am, and if you think you are you can try me by 'Nsibidi.

108. The 'Nsibidi box containing all the emblems, etc., of the society. This box could not be opened until the head chief arrived.

109. Two 'Nsibidi hooks. As the two men in 106 and 107 had quarrelled, the head chief gave them the two 'Nsibidi hooks to hold, and then took them to the big drum where the playing and dancing was going on.

110. The big drum.

111. The rattle which was played by the beater of the big drum.

112. The man who played the big drum, when the play was over he wiped his arms with the drum stick, which he held in his left hand, to show the people that the dancing and playing were finished.

113. A small river with a bridge over it leading to the place where the 'Nsibidi play was being held. Before any one could pass this bridge they were asked if they understood 'Nsibidi.

114. The 'Nsibidi stick which stood upright in the water. If a man understood 'Nsibidi he would take the stick in both hands before he crossed the bridge to see the play.

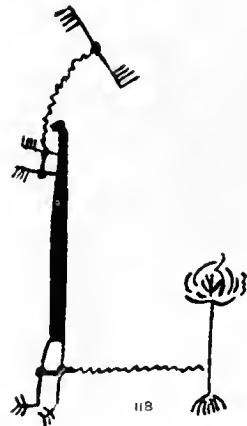
115. The native razor used by the man who beat the big drum (112) before he went to the play.

116. The stone fastened down by sticks upon which the razor was sharpened.

117. The bag in which the razor was kept.

(The signs from 97 to 117 were made and explained to me at Okuni by Odidi.)

118. A chief who knew 'Nsibidi well. He became mad and the members told him to go away, because they were afraid he might explain 'Nsibidi to the women and to people who did not belong to the society. The mad chief refused to go away and tried



to get into the 'Nsibidi house, so the members put native handcuffs on him and tied him up to the rafters, but the tie-tie broke, so they put native leg irons on him and fastened him to a tree with the 'Nsibidi chain.

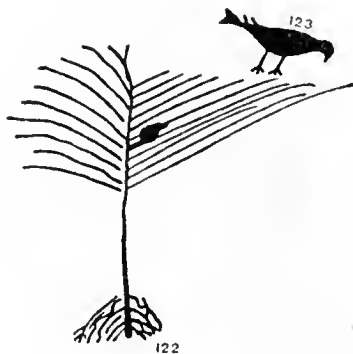
119. The rat for which a trap should be set.

120. A rat trap set to catch the rat which ate the corn in the house. Any visitor who made this sign on the ground would mean that the owner of the house should set a trap in that place to catch the rat.

121. A grave with a dead body in it. When a member makes this sign to another member it means that his brother is dead and that his body has been placed in a grave. The small strokes represent the earth, which has been thrown out of the grave on both sides.

122. The 'Nsibidi palm tree. When the society is going to play, a man is sent out to get palm wine for the members to drink. The calabash collecting the palm wine can be seen in the branches of the tree.

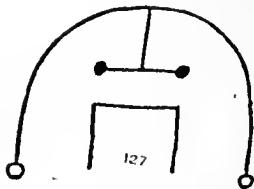
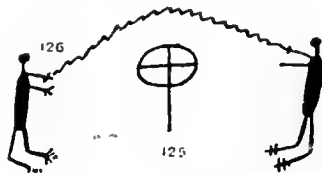
123. A bird which was feeding on the palm tree, but when it saw the man climbing up the tree to get the palm wine it flew away.



124. The man in the centre is the head chief of the 'Nsibidi, sitting on a chair in the middle of the native benches, represented by the crossed sticks.

125. The 'Nsibidi spear stuck in the ground.

126. Two men standing on either side of the spear holding the 'Nsibidi chain. If anyone who did not know 'Nsibidi passed this chain he would have to kill a goat for the members to eat. A person who knew 'Nsibidi would go up to the man on the left of the spear and bending down would place both hands round the man's knees and then throw his left hand over his left shoulder. He



would then do the same to the man standing on the right of the spear, and having thrown his right hand over his right shoulder, would lift the 'Nsibidi chain and pass underneath.

127. The outside line is the 'Nsibidi house, and the two circles at the ends are the holes into which the posts at the entrance are inserted. The line from the top with the two balls suspended is the 'Nsibidi lamp.

128. A man holding a club in his hands, ready to kill a goat.

129. The goat given to the society by the chief in 124.

When the two signs 128 and 129 are made for a man it means that he must kill a goat for the members to eat.

130. The 'Nsibidi elephant represented by a man dressed up.

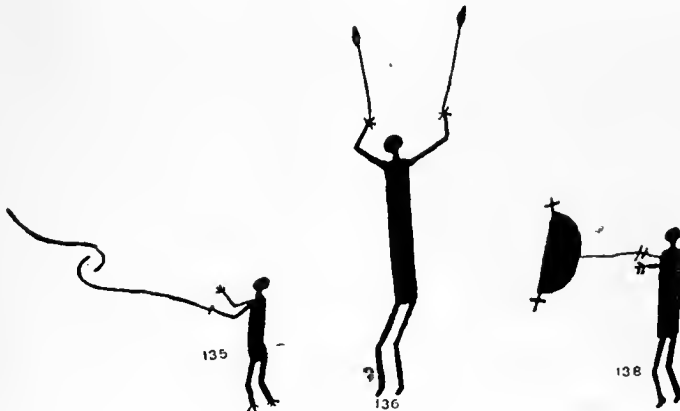
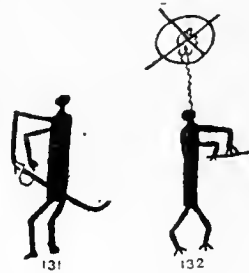
131. A man with a sword watching the man who was dressed up to represent the 'Nsibidi elephant to see that he did not hurt anyone, and to prevent any harm happening to him.

132. When 'Nsibidi is about to be played, the members take a certain root from the ground and place it on a man's head. If the root stands up straight then they know that the 'Nsibidi is good and they may play; but if the root bends over to one side or the other they must not play.

133. The 'Nsibidi wheel which is held up behind the man in 132 by a member to protect him. When this sign is made on the ground it means that a man is required to carry a load.

134. The 'Nsibidi bridge which is made over streams to enable the members to cross to the play. If a man should fall into the river the members throw him the 'Nsibidi stick, which is shown underneath the bridge.

135. A man with the 'Nsibidi hook in his hand. This hook is always used when the members play. When this sign is made it means that a man has to go to a distant country to get something for the members.

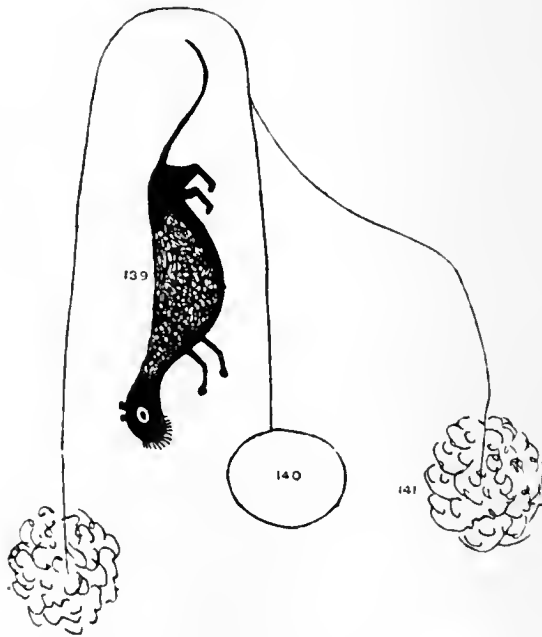


136. The head chief of the country dancing with a spear in each hand to show the people that all the country belongs to him. When he has finished dancing the play stops.

137. The 'Nsibidi symbol which is shaken in the hand, it has poison inside, and when it is presented to anyone he runs away.

138. A man holding the 'Nsibidi looking-glass, made out of a board, coloured black, upon which medicine has been spat. When the members play everyone has to look upon it. When the man bends down to put the looking-glass on the ground, the play stops.

139. The 'Nsibidi leopard. A man dressed up represents the leopard and goes out before the play commences, to drive anyone away who is not a member. He dances backwards and forwards.



140. A ring which is placed round the leopard's neck and is attached to 141.

141. A cloth with ornamented ends which is held round the man representing the leopard, by two other members of the 'Nsibidi Society to stop the leopard from going too far, or in the wrong direction.

(The signs 118 to 141 were given to me by a native of Okuni, named Insoh Agara.)

142. A leper, he had no nose or mouth, his fingers were eaten away, and one leg was gone.

143. One day he saw his hair in a looking-glass and thought he would like to comb it.

144. But when he had bought the native comb he could not hold it in his hands as his fingers had been eaten away.

145. (a) A native canoe.
(b) The seats in the canoe.
(c) Two boys who were in the canoe and were very frightened when it rolled about.
(d) The shelter in the canoe made from palm leaves with the three bent wood supports.
(e) The stern of the canoe where the boy sat to steer the canoe.

(The signs 142 to 145 were made and explained to me by Ennenni, a dancing and singing girl from Okuni. This girl is also well versed in folklore and has related several stories to me.)

The following 'Nsibidi signs were tattooed on the bodies of natives and were copied by me. The names of the natives and the countries they came from are given in each instance, together with the dates when the signs were copied.

146. Two young girls carrying water pots on their heads.

147. The water pot.

148. Two sticks crossed before the door of the Egbo house.

(Signs 146 to 148 were copied from the left fore-arm of Ekua-efa, an Okuni woman.)

149. Egbo sticks.

150. The sign of love. A man and woman sleeping together. On right leg of Ekua-efa.

IKOM.

151. On left arm of Ejen Eba, an Ikom woman. Ebima mark.

ENFITOP.

152. Ebima mark.

153. Rods.

154. Love. A man and girl sleeping together. The man brought a rod for the girl, but she refused it and left the man.

152, 153, and 154. On left arm of Omum, an Okanga woman.

155. Two girls sleeping together.

156. Emang. An iron symbol held by a chief in his hand. There is a ju-ju in the middle of the handle.

155 and 156. On left arm of Ekoma, an Okanga woman.

157. The 'Nsibidi House. On both breasts of Ekoma.

ATTAM. (OBUBRA DISTRICT.)

158. A house with a man and woman in it. There were also rods and a looking-glass in the house.

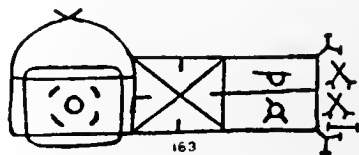
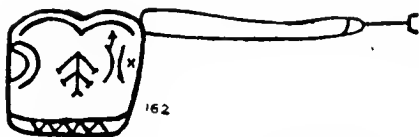
159. Two children in a house.

160. A sick boy and girl sleeping together.

158, 159, and 160. On left arm of Abaiye, a woman from Ofun Attam.

161. A sick boy and sick girl, in a house, with a looking-glass, and the rods the boy gave to the girl. On right arm of Abaiye.

162. Testicles and penis. A man and woman had a quarrel, the woman had a baby. Across the breast of Abaiye.



OLULUMO.

163. House with a girl dressed up, and a looking-glass. The crossed lines on the right represent beads and other ornaments. Across the breast of Ewor Obiri.

INDE.

164. A looking-glass.

165. Two lovers in a house.

164 and 165. On right arm of Agum, an Inde woman.

166, 167, and 168. On left arm of Agum.

169. A sick man and girl, = the Inde mark. On right breast of Agum.

INDEM. (OBUBRA DISTRICT.)

170. A hawk.

171. A horn for blowing.

170 and 171. On right arm of Neji, an Indem woman.

172 to 175. On left arm of Neji.

176 to 178. On left hand of Neji.

179. The cross is a water pot in the room, with a man and woman sleeping together, with a pillow at the head and foot. On left leg of Neji.

180 to 183. On right leg of Neji.

184. The woman told her daughter that she must marry a certain man, but the girl refused. The man took one pillow and the woman took two pillows.

185. Tie-tie.

186. A looking-glass.

184 to 186. On breast and body of Neji.

187. On right arm of Intun, an Indem woman.

188. On right leg of Intun. An iron pin made by the Oka blacksmiths, tuck in the hair.

189. On left leg of Intun.

190. On left arm of Intun. Two razors on a looking-glass tied round with tie-tie.

BENDE (IBO TRIBE.)

191 to 195. On left fore-arm of Okenwa, a native of Bende.

196 to 199. On side of left arm of Okenwa.

INDE.

200. A man and woman sleeping in a house with a calabash of water brought by the man represented by the cross on the top. On left thigh of 'Mbana, an Inde woman.

201. On calf of left leg of 'Mbana.

202. An old man. On right fore-arm of 'Mbana.

203. Okereuki.

204. On left fore-arm of 'Mbana.

205. A looking-glass. On left wrist of 'Mbana.

206. On left thigh of 'Mbana.

AKUNAKUNA. (AFIKPO DISTRICT.)

207. On right fore-arm of Abo Abassi, an Akuna Muna man.

BENDE DISTRICT. (IBO TRIBE.)

208. On left breast of Essem, a Bende man (a man offered two rods to a woman, but she refused them and turned her back upon him).

209. A tortoise. On left arm of Essem.

210. Steering wheel on a steamer with iron supports. On left fore-arm of Essem.

INKUM.

211. On right breast of Eyang, an Inkum woman.

212 to 215. On right fore-arm of Eyang.

ADDA. (IBO TRIBE.)

216. Love, with pillow at head and foot. On right cheek of Okibe, an Addaman.

217. On left breast (a woman's ovaries).

218. On left shoulder (an anchor).

219. The 'Nsibidi house in which the keys were kept. On right cheek.

INJOR. (EKOI TRIBE.)

- 220. Iron symbol held by a chief.
- 221. The handle.
- 222. 'Nsibidi feather worn in cap.
- 220 to 222. On left arm of Eba, an Obokum woman.

AFIKPO DISTRICT. (IBO TRIBE.)

- 223. An accordion. On left arm of 'Mgbor Ichuku, an Afikpo woman.
- 224. Native razors.
- 225. A man tied up to the 'Nsibidi stick.
- 226. A man bound with his arms and legs round a post.
- 224 to 226. On left fore-arm.
- 227. A bad palaver man.
- 228. The propeller of a steamer.
- 229. A turtle.
- 230. A bad man.
- 231.
- 232. The nest of a goose.
- 233. Same as No. 228.
- 229 to 233. On right fore-arm.
- 234. On calf of right leg.
- 235. On both cheeks of face.

IBO TRIBE. (EDDA.)

- 236. Quarrel between husband and wife.
- 237.
- 238. Ekipat stick.
- 236 to 238. On left fore-arm of Okure, an Edda woman.
- 239.
- 240. Beritowa, a native-made matchet.
- 239 and 240. On right fore-arm.

AKPARABONG.

- 241. On right breast of Edi, an Akparabong woman—keys.
- 242. A man and woman in a house. On left breast.
- 243. A stranger sleeping with a girl. On right fore-arm.
- 244. Same as No. 241. On left fore-arm.
- 245. A calabash of water hung up with sticks. On calf of right leg.

BOKI TRIBE.

- 246. A sick man and woman who will not sleep together. On right cheek of 'Mboa, an Abu woman.

247. On left cheek.

248. A pool of water with three birds drinking out of it. On left arm.

OGADA. (OBUBRA DISTRICT.)

250. A looking-glass.

250 and 251. On left arm of Ekuna, an Ogada woman.

INJOR-. (EKOI TRIBE.)

252. Two lepers sleeping together. On right leg of Eba, an Obokum woman.

253. "Ato Kerenki." On left leg.

254. Ato Kerenki.

255. Decoration.

IKOM.

256. A house with four doors. A man and woman sleeping together; the woman has a looking-glass in her hand. On right breast of Bogor, an Ikom man.

257 and 258. On left breast.

259. On left wrist.

260. A man tied up to a stiek with his legs through holes; a prisoner. On back of neck, down spine.

261. A flower to place in the hair. On left breast of Egom, an Ikom woman.

262. On left fore-arm.

BOKI TRIBE.

263. On left breast of Bobnor, an Iso-Bendinge man.

268. Rods in a house.

264 to 268. On left arm.

AKPARABONG.

269. The moon. On right breast of Adda, an Akparabong woman.

270. A man and woman with an infant. On left arm.

271. 'Mbannig Ajassa Anne, a bird. On right breast of Agbor, an Akparabong woman.

272. A young boy and girl together in a house which they had built. On left breast of Manku, an Akparabong woman.

273. On right arm of Adda, an Akparabong woman.

274. On chin.

275. A boy and girl together, who had a looking-glass, which was hung up on a nail. On left arm.

276 and 277. On left fore-arm.

278. On right thigh.

279 to 281. On calf of left leg.

INDEM. (OBUBRA DISTRICT.)

282. "Emang," a brass symbol of authority belonging to a powerful chief.
On right breast of Kandem, an Indem woman.

283. "Epupu," an earthenware pot with decorations. On left breast.

MISCELLANEA.

PROCEEDINGS OF THE ROYAL ANTHROPOLOGICAL INSTITUTE, 1911.

January 24th, 1911.

Annual General Meeting. Dr. C. H. READ, P.S.A., ex-President, in the chair.

The minutes of the last Annual General Meeting were read and carried.

The CHAIRMAN appointed Messrs. R. DURAND and H. S. KINGSFORD as Scrutineers, and declared the ballot open.

The SECRETARY read the Report of Council for 1910, which, on the motion of the CHAIRMAN, seconded by Dr. C. S. MYERS, was adopted unanimously.

The TREASURER read his Report for 1910, which, on the motion of the CHAIRMAN, seconded by Mr. A. L. LEWIS, was unanimously adopted.

The CHAIRMAN expressed his regret at the absence of the PRESIDENT owing to ill-health.

The SECRETARY read the President's address, entitled "Methods of Ethnography."

On the motion of Mr. LONGWORTH DAMES, seconded by the CHAIRMAN, it was resolved unanimously that a request be conveyed to the PRESIDENT to allow his address to be printed in the Institute's *Journal*.

The SCRUTINEERS then handed in their Report, and the following were declared to be duly elected as Officers and Council for 1911-12.

President.

Sir Herbert H. Risley, K.C.I.E., C.S.I.

Vice-Presidents.

A. J. Evans, Esq., M.A., D.Litt., F.R.S., F.B.A.		Sir R. B. Martin, Bart., M.A. A. P. Maudslay, Esq., M.A., F.S.A.
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Hon. Secretary.—T. A. Joyce, Esq., M.A.

Hon. Treasurer.—J. Gray, Esq., B.Sc.

Council.

W. Crooke, Esq., B.A.		S. H. Ray, Esq., M.A.
O. M. Dalton, Esq., M.A., F.S.A.	|	W. H. R. Rivers, Esq., M.A., M.D., F.R.S.
M. L. Dames, Esq.	|	C. G. Seligmann, Esq., M.D.
J. Edge-Partington, Esq.	|	Professor G. Elliott Smith, M.A., M.D., F.R.S.
R. J. Gladstone, Esq., M.D.	|	Professor A. Thomson, M.A., M.B.
T. C. Hodson, Esq.	|	E. Torday, Esq.
Sir H. H. Johnston, G.C.M.G., K.C.B.	|	Professor E. Westermarck, Ph.D.
H. S. Harrison, Esq. D.Sc.	|	W. Wright, Esq., M.B., D.Sc.
W. McDougall, Esq., M.A.	|	G. Udny Yule, Esq., F.S.S.
R. R. Marett, Esq., M.A.		
F. G. Parsons, Esq., F.R.C.S.		

February 7th, 1911.

Ordinary Meeting. Professor W. GOWLAND, ex-President, in the chair.

The CHAIRMAN announced the election of Dr. A. E. KIDD and Mr. R. T. SMALLBONES as Ordinary Fellows of the Institute.

The TREASURER read a paper on "Recent Theories about Palæolithic Man," illustrated by lantern slides and specimens.

The paper was discussed by Professor THANE, Dr. SHRUBSALL, Mr. YULE, Mr. PARKYN, Dr. CAMPBELL, Mr. HAZZLEDINE WARREN and the PRESIDENT, and the TREASURER replied.

February 21st, 1911.

Ordinary Meeting. Professor W. GOWLAND, ex-President, in the chair.

The CHAIRMAN announced the election of Sir PHILIP HAMILTON-GRIERSON and Mr. EDGAR THURSTON, C.I.E., as Ordinary Fellows of the Institute.

The Rev. J. W. HAYES read a paper on "Prehistoric and Aboriginal Pottery Manufacture," illustrated by lantern slides and specimens.

The paper was discussed by Messrs. DOBREE, READER, MILLER CHRISTY, BAINES, LEWIS, Major O'BRIEN, Messrs. TABOR, HAZZLEDINE WARREN and the CHAIRMAN, and the LECTURER replied.

March 7th, 1911.

Ordinary Meeting. Sir R. B. MARTIN, Vice-President, in the chair.

The CHAIRMAN announced the election of Professor L. W. LYDE as an Ordinary Fellow of the Institute.

Dr. W. L. II. DUCKWORTH read a paper on "Cave Exploration at Gibraltar in September, 1910," illustrated by lantern slides.

The paper was discussed by Dr. KEITH, Mr. GRAY, Dr. WATERSTON and the CHAIRMAN, and the LECTURER replied.

March 21st, 1911.

Ordinary Meeting. Professor W. RIDGEWAY, ex-President, in the chair.

The CHAIRMAN announced the resignation by Sir H. H. RISLEY of the office of President, owing to ill-health, and the appointment of Mr. A. P. MAUDSLAY to that office.

The election was announced of Dr. A. B. WADDELL and Mr. M. BRUCE WILLIAMS as Ordinary Fellows of the Institute.

Dr. SHRUBSALL read a paper on "The Physical Characters of Bushmen, Past and Present," illustrated by lantern slides and specimens.

The paper was discussed by Professor KEITH, the TREASURER and the CHAIRMAN.

May 9th, 1911.

Ordinary Meeting. Mr. A. P. MAUDSLAY, President, in the chair.

The PRESIDENT on taking the chair for the first time inaugurated his office with a few remarks. On the motion of the PRESIDENT, seconded by the TREASURER, it was unanimously resolved—

"That the Fellows of the Royal Anthropological Institute assembled at an Evening Meeting desire to express their sincere regret at the resignation of their President, Sir HERBERT RISLEY, and trust that he may be speedily restored to health and may again be able to take his place on the Council."

The election was announced of Messrs. J. G. CRUICKSHANK, C. FLEISCHMANN, T. SNOW and Captain C. H. STIGAND as Ordinary Fellows of the Institute.

Professor C. J. PATTEN exhibited a skull of an adolescent chimpanzee, as well as some lantern slides.

Mr. F. G. PARSONS read a paper on "Some Saxon Bones from Folkestone," illustrated by lantern slides and a collection of specimens.

The paper was discussed by Professor ELLIOTT SMITH, Mr. SMURTHWAITE, the TREASURER, Professor PATTEN and the PRESIDENT, and Mr. PARSONS replied.

Mr. A. L. LEWIS contributed a paper entitled, "Further Notes on French Dolmens," illustrated by lantern slides.

The paper was discussed by the PRESIDENT, Mr. PARKYN and Professor ELLIOTT SMITH, and Mr. LEWIS replied.

May 16th, 1911.

Special Meeting. Professor W. GOWLAND, ex-President, in the chair.

A reply from Sir HERBERT RISLEY to the motion passed at the last meeting was read by the CHAIRMAN.

Mr. PERCY BRAMLEY read a paper on "River Life and People in Upper India," illustrated by lantern slides.

The paper was discussed by Mr. HODSON, Dr. SELIGMANN, Major O'BRIEN, Mr. BOLSTER and the CHAIRMAN, and the LECTURER replied.

May 23rd, 1911.

Ordinary Meeting. Dr. A. C. HADDON, ex-President, in the Chair.

The election was announced of Messrs. H. VISCHER and S. S. KHAN as Ordinary Fellows of the Institute.

Mr. S. HAZZLEDINE WARREN read a paper on "The Classification of the Prehistoric Remains of Eastern Essex," illustrated by lantern slides and a collection of specimens, and also, on behalf of Dr. KEITH, who was unavoidably absent, a paper on "A Prehistoric Skeleton from Walton-on-Naze," illustrated by lantern slides.

The papers were discussed by Professor THANE, Mr. NEWTON, Dr. GLADSTONE, Dr. SHRUBSALL, Rev. HAYES, Dr. FORBES, Mr. PARKYN and the TREASURER, and Mr. WARREN replied.

June 13th, 1911.

Ordinary Meeting. Mr. A. P. MAUDSLAY, President, in the chair.

Professor N. TAGLIAFERRO made a communication on prehistoric burials in a natural cavern near M'Kabba, Malta.

Major A. J. O'BRIEN read a paper on "The Saints of the Indus Valley," illustrated by lantern slides.

The paper was discussed by Mr. M. LONGWORTH DAMES, Mr. FAGAN, MAJOR E. O'BRIEN and the PRESIDENT.

The election was announced of Rev. PÈRE CAYZAC, Messrs. C. H. DURING, W. KIRKPATRICK, J. H. WEST SHEANE, J. SHERREN and Dr. G. A. TURNER as Ordinary Fellows of the Institute.

November 14th, 1911.

Ordinary Meeting. Mr. A. P. MAUDSLAY, President, in the chair.

The election was announced of Miss Z. BEN-YUSUF, Messrs. L. W. G. BÜCHER, J. COOPER CLARK, Dr. IAN CZEKANOWSKI, Messrs. H. FAULDS, G. W. W. MURRAY,

H. J. E. PEAKE, F. POSSELT, W. H. W. STRACHAN, C.M.G., and the Rev. F. G. WRIGHT as Ordinary Fellows of the Institute.

The PRESIDENT alluded to the death of Sir H. H. RISLEY, and proposed formally the following resolution:—

“That the Fellows of the Royal Anthropological Institute desire to record their appreciation of Sir Herbert Risley’s great services to Anthropology, and their keen regret at the untimely death of an ideal President of the Institute.”

The resolution was seconded by the SECRETARY and carried unanimously.

Mr. R. W. WILLIAMSON delivered a lecture on “The Mafulu Mountain People of British New Guinea,” illustrated with lantern slides and specimens.

The lecture was discussed by Dr. SELIGMANN, Dr. RIVERS and Mr. RAY, and the LECTURER replied.

November 28th, 1911.

Ordinary Meeting. Mr. A. P. MAUDSLAY, President, in the chair.

The election was announced of Mr. T. E. GOODYEAR as an Ordinary Fellow of the Institute.

The PRESIDENT then presented to Mr. H. S. KINGSFORD, recently assistant-secretary, a pair of binoculars as a memento of the many years he had spent in the service of the Institute. Mr. H. S. KINGSFORD replied in fitting terms.

Capt. BOYLE T. SOMERVILLE read a paper on “Prehistoric Monuments in the Outer Hebrides and their Astronomical Significance,” illustrated by lantern slides.

The paper was discussed by Mr. A. L. LEWIS, Rev. J. W. HAYES, the TREASURER, Mr. PARKYN and the PRESIDENT, and the LECTURER replied.

December 12th, 1911.

Ordinary Meeting. Mr. UDN YULE in the chair.

The minutes of the last meeting were read and carried.

The election was announced of Mr. J. C. C. COXHEAD and Dr. R. E. McCONNELL as Ordinary Fellows of the Institute.

The CHAIRMAN announced that the PRESIDENT had appointed Messrs. O. M. DALTON and R. H. PYE as auditors of the Institute’s accounts.

The TREASURER read a paper on “A New Perigraph,” illustrated by lantern slides and specimens.

The paper was discussed by the CHAIRMAN, Mr. PARSONS, Dr. SHIRUBSALL and Mr. YOUNG, and the TREASURER replied.

The CHAIRMAN announced the election of Padre P. W. SCHMIDT, Dr. PIGORINI, and Professor M. BOULE as Honorary Fellows of the Institute.

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1911. Boulé, Prof. M. Muséum National d'Histoire Naturelle, 3 Place Valhubert, Paris.
1902. Brigham, Dr. W. T. Bernice Pauahi Museum. Honolulu, Hawaii.
1876. Cartailhac, M. Emile. 5 Rue de la Chainc, Toulouse, France. (¶)
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- 1889 Haddon, Alfred C., Esq., M.A., Sc.D., F.R.S., M.R.I.A., PAST PRESIDENT (1901-1903), Reader in Ethnology in the University of Cambridge, Assoc. Anthropol. Soc. Paris; Corr. Mem. Anthropol. Soc. Berlin, Florence, Rome and Stockholm, *Inisfail, Hills Road, Cambridge. (¶§*)*
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- 1910 Haines, B. J., Esq., *Travancore House, Pewsey.*
- 1893 Hale, Charles George, Esq., 77 *St. Mary's Mansions, Paddington, W.*
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- 1903 Hampton, G. H., Esq., 22 *Cleveland Terrace, Darlington.*
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- 1902 Harrison, Alfred C., Esq., 1616 *Locust Street, Philadelphia.**
- 1911 Harrison, C., Esq., *Delkatla Lodge, Massett, British Columbia.*
- 1904 Harrison, H. S., Esq., D.Sc., *The Horniman Museum, Forest Hill, S.E. (§)*
- 1897 Hartland, E. S., Esq., F.S.A., *Highgarth, Gloucester. (*¶§)*
- 1909 Harward, F. H., Esq., Assistant District Commissioner, *S. Nigeria.*
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- 1889 Haverfield, F., Esq., M.A., F.B.A., F.S.A., Camden Professor of Ancient History in the University of Oxford, *Winshields, Headington Hill, Oxford.* (*)
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- 1905 Hay, Matthew, Esq., M.D., Professor of Forensic Medicine, *The University, Aberdeen.*
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- 1910 Heimbrod, G., Esq., *P.O. Nadi, Fiji (via Lautaka).*
- 1904 Hennessey, Captain H. Pope, *Mombasa, British East Africa.* (¶)
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- 1895 Hickson, Prof. S. J., D.Sc., F.R.S., *The University, Manchester.* (*)
- 1909 Higgins, H., Esq., 6 *Rollestone Drive, Wallasey, Cheshire.*
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- 1906 Hodges, F. W., Esq., *H.M. Patent Office, 25, Southampton Buildings, W.C.*
- 1909 Hodgson, G. F., Esq., Assistant District Commissioner, *S. Nigeria.*
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- 1906 Hodson, T. C., Esq., 10 *Wood Lane, Highgate, N.* (¶)
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- 1898 Parkin, Wm., Esq., *The Mount, Sheffield.*
- 1906 Parkinson, John, Esq., *The Dene, Great Shelford, Cambridge. (¶)*

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- 1909 Patten, C. J., Esq., M.A., M.D., Sc.D., Professor of Anatomy, *The University, Sheffield.*
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- 1891 Pyc, Randall H., Esq., 32 *Mattock Lane, Ealing.* (§)
- 1904 Quick, A. S., Esq., HON. COUNSEL, 123 *Loughborough Park, S.W.*
- 1907 Quiggin, Mrs. Hingston, M.A., 88 *Hartington Grove, Cambridge.* (*)
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- 1911 Vischer, Hans, Esq., Director of Education, *S. Nigeria.*
- 1902 Visick, H. C., Esq., M.D., 29 *Brownwood Park, Green Lanes, N.*
- 1911 Waddell, Dr. A. B., *Roseland, Baldoek, Herts*
- 1891 Waddell, Lt.-Col. L. A., C.B., C.I.E., LL.D., *Kite's Nest, Hastings.* (*¶)
- 1901 Waddington, S., Esq., B.A., 15 *Cambridge Street, Hyde Park, W.*

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- 1866 Wallace, A. R., Esq., O.M., D.C.L., F.R.S., F.L.S., F.R.G.S., F.Z.S., *Broadstone, Wimborne, Dorset.* (¶)
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- 1902 Watt, J., Esq., District Commissioner, *Calabar, Southern Nigeria.* (¶)
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- 1905 Westernmark, E., Esq., Ph.D., Professor of Sociology in the University of London, 8 *Rockley Road, West Kensington Park, W.* (¶§)
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- 1901 White, Franklin, Esq., *P.O. Box 669, Bulacayo.* (¶)
- 1907 White, James Martin, Esq., 1 *Cumberland Place, Regent's Park, N.W.*
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- 1909 Williamson, R. W., Esq., *The Copse, Brook, near Witley, Surrey.* (¶§)
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- 1869 Winwood, Rev. H. H., M.A., F.G.S., 11 *Cavendish Crescent, Bath.*
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- 1906 Yule, G. Udny, Esq., F.S.S., 28 *Great Ormond Street, W.C.* (¶§)

 AFFILIATED SOCIETIES [under By-Law IX].

- 1909 The Oxford University Anthropological Society, c/o *R. R. Marett, Esq., M.A., Exeter College, Oxford.*
- 1910 The Cambridge University Anthropological Club, c/o *A. R. Brown, Esq., M.A., Trinity College, Cambridge.*

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SOCIETIES, Etc., EXCHANGING PUBLICATIONS

WITH THE
ROYAL ANTHROPOLOGICAL INSTITUTE.

GREAT BRITAIN AND IRELAND.

Dublin... Royal Dublin Society.

- Royal Irish Academy.
- Royal Society of Antiquaries.

Edinburgh... Royal College of Physicians.

- Royal Society of Edinburgh.
- Society of Antiquaries of Scotland.

Glasgow... Philosophical Society.*Liverpool*... Institute of Tropical Research.

- University Institute of Archaeology.

London... African Society.

- British Medical Association.
- Folklore Society.
- Geologists' Association.
- Hellenic Society.
- India Office, Whitehall.
- Japan Society.

London... Nature.

- Palestine Exploration Fund.
- Quatuor Coronati Lodge, No. 2076.

— Royal Archaeological Institute.

— Royal Asiatic Society.

— Royal Colonial Institute.

— Royal Geographical Society.

— Royal Society.

— Royal Society of Literature.

— Royal Statistical Society.

— Royal United Service Institution.

— Society of Antiquaries.

— Society of Biblical Archaeology.

Taunton... The Somersetshire Archaeological Society.*Truro*... Royal Institution of Cornwall.

EUROPE.

AUSTRO-HUNGARY.

Agram... Kroätische Archäologische Gesellschaft.*Budapest*... Magyar Tudományos Akademia.

— Magyar Nemzeti Néprajzi Östálya.

Cracow... Akademija Umiejtnosci.*Sarajevo*... Landesmuseum (Wissenschaftliche Mittheilungen aus Bosnien).*Vienna*... Anthropologische Gesellschaft.

— K. Akademie der Wissenschaften.

BELGIUM.

Brussels... Académie Royale des Sciences.

— Collection de Monographies Ethnographiques.

— Instituts Solvay.

— Société d'Anthropologie de Bruxelles.

— Société d'Archéologie de Bruxelles.

DENMARK.

Copenhagen... Société des Antiquaires du Nord.

FRANCE.

Lyons... Société d'Anthropologie de Lyon.*Paris*... L'Anthropologie.*Paris*... École d'Anthropologie.

— Revue de l'Histoire des Religions.

— Soc. des Americanistes.

— Société d'Anthropologie.

— Année Sociologique.

GERMANY.

Berlin... Berliner Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte.

— K. Museum für Völkerkunde.

— Seminar für Orientalische Sprachen.

Brunswick... Zentralblatt für Anthropologie, etc.*Cologne*... Rautenstranch-Joest-Museum.*Giessen*... Hessische Blätter*Gotha*... Petermann's Mittheilungen.*Halle-a-d-Saale*... Kaiserliche Leopoldina Carolina Akademie der Deutschen Naturforscher.

— Deutsche Morgenländische Gesellschaft.

Kiel... Anthropologischer Verein für Schleswig-Holstein.*Leipzig*... Archiv für Religionswissenschaft.

— Archiv für Rassen und Gesellschaft Biologie.

Leipzig... Verein für Erdkunde.

— Orientalisches Archiv.

Munich... Deutsche Gesellschaft für Anthropologie, Ethnologie, und Urgeschichte.

Stuttgart... Zeitschrift für Morphologie und Anthropologie.

GREECE.

Athens... Ephemeris Archaïologikè.

— Annual of the British School of Archæology.

ITALY.

Florence... Società Italiana di Antropologia, Etnologia, e Psicologia Comparata.

Rome... Accademia dei Lincei.

— Bullettino di Paletnologia Italiana.

— Società Romana di Antropologia.

Turin... Archivio di Psichiatria.

NETHERLANDS.

Amsterdam... Koninklijke Akademie van Wetenschappen.

Leiden... Internationales Archiv für Ethnographie.

The Hague... Koninklijk Instituut voor

de Taal-, Land-, en Volkenkunde van Nederlandsch Indië.

PORTUGAL.

Lisbon... Portugal em Africa.

Porto... Portugalia.

RUSSIA.

Dorpat... Publications of the University.

Helsingfors... Suomen Muinaismuistoyhdistyksen Arkakauskirja (Journal of the Finnish Archæological Society).

Moscow... Imper. Obshchestvo Lubitelei Iestestvoznania, Antropologii, i Etnografii.

St. Petersburg... Imper. Akademia Nauk.

SWEDEN.

Stockholm... Academy of Antiquities, National Museum.

— Nordiska Museet.

— Ymer.

Uppsala... Knngl. Universitetets Bibliotek.

SWITZERLAND.

Neuchâtel... Soc. Neuchateloise de Géographie.

Zurich... Musée National Suisse.

AFRICA.

CAPE COLONY.

Cape Town... Royal Society of South Africa.

EGYPT.

Giza... Archæological Survey of Nubia.

Khartum... Wellcome Laboratory Reports.

AMERICA.

ARGENTINE.

La Plata... Museum.

BRAZIL.

Rio de Janeiro... Museu Nacional.

CANADA.

Ottawa... Royal Society of Canada.

Toronto... Canadian Institute.

UNITED STATES.

Berkeley, Cal.... University of California.

Cambridge, Mass.... Peabody Museum, Science.

Chicago... Field Museum.

New York... American Museum of Natural History.

— Columbia University.

Philadelphia... Free Museum of Science and Art (University of Philadelphia, Department of Archæology.)

Michigan... American Antiquarian.

Washington... American Anthropologist.

— Bureau of Ethnology.

— Smithsonian Institution.

— United States Geological Survey.

— United States National Museum.

Worcester, Mass.... American Journal of Psychology.

ASIA.

CHINA.

Shanghai... Royal Asiatic Society
(China branch).

INDIA.

Bombay... Anthropological Society.

— Indian Antiquary.

Calcutta... Bengal Asiatic Society.

Colombo... Royal Asiatic Society (Ceylon branch).

Rangoon... Burma Research Society.

Simla... Archæological Reports.

JAPAN.

Tokio... Asiatic Society of Japan.

— Tokio-Daigaku (Imperial University).

JAVA.

Batavia... Bataviaasche Genootschap van
Kunsten en Wetenschappen.

PHILIPPINE ISLANDS.

Manila... Ethnological Survey of the
Philippine Islands.

SIAM.

Bangkok... National Library.

STRAITS SETTLEMENTS.

Singapore... Royal Asiatic Society
(Straits Branch).

AUSTRALIA AND PACIFIC.

Honolulu... Bernice Pauahi Bishop
Museum.

Melbourne... Royal Society of Vic-
toria.

New Plymouth, N.Z... Polynesian Society.

Sydney... Australian Museum.

— Australasian Association for the
Advancement of Science.

— Royal Society of New South
Wales.

EXCHANGES FOR "MAN."

ENGLAND.

Colchester... Transactions of the Essex
Archæological Society.

Hull... The Naturalist.

Liverpool... Institute of Tropical Research.

— Journal of the Gypsy Lore Society.

London... Annals of Psychical Science.

— British Association.

— Church Missionary Review.

— Eugenics Review.

— Journal of the East India Association.

— Lancet.

— Reliquary and Illustrated Archæ-
ologist.

— Saga-Book of the Viking Club.

— Sociological Review.

— South American Missionary Society.

ARGENTINE.

La Plata... Museum.

AUSTRO-HUNGARY.

Budapest... Magyar Nemzeti Museum.

Kolozsvár... Dolgozatok.

Lwow (Lemberg)... Ludu.

Mödling... Anthropos.

Uh. Hradiště... Právěk.

BELGIUM.

Brussels... Bulletin de la Société d'Études
Coloniales.

— Bull. de la Soc. Géographie.

— Instituts Solvay.

— La Revue Congolaise.

— Missions Belges.

Ghent... Volkskunde.

FRANCE.

Dax... Société de Borda.

Paris... L'Homme Préhistorique.

— La Nature.

— La Revue Préhistorique.

— Revue des Études Ethnographiques.

— Revue des Traditions Populaires.

— Statistique Générale de la France.

GERMANY.

Danzig... West Preussisches Provincial-Museum.
Dresden... Bericht des Vereins für Erdkunde.
Frankfurt a/M... Völker Museum.
Giessen... Hessische Blätter.
Gotha... Petermanns Mitteilungen.
Guben... Niederlausitzer Mittheilungen.
Hamburg... Museum für Völkerkunde.
Kiel... Mitteilungen des Anthropologischen Vereins in Schleswig-Holstein.
Munich... Correspondenzblatt.
— Geographische Gesellschaft.
— Prähistorische Blätter.
Nürnberg... Bericht der Natur-historischen Gesellschaft.

INDIA.

Simla... Archæological Reports.

ITALY.

Como... Rivista Archeologica della Provincia de Como.
Naples... La Scienza Sociale.
Rome... Rivista Italiana di Sociologia.

NATAL.

Pietermaritzburg ... Museum.

NEW SOUTH WALES.

Sydney... Science of Man.

NORWAY.

Trondhjem, K. Norske Videnskabers Selskab

OCEANIA.

Fiji... Na Mata.
Samoa... O le Sulu.

PORTUGAL.

Lisbon... Archeologo Português.
Serpa... A Tradição.

RHODESIA.

Bulawayo... Proceedings of the Rhodesian Scientific Association.

RUSSIA.

St. Petersburg... Zhivaya Starina.

SWEDEN.

Uppsala... Kungl. Universitetets Bibliotek.

SWITZERLAND.

Zürich... Schweizerisches Archiv für Volkskunde.
— Jahresbericht der Schweiz Gesellschaft für Urgeschichte.

SYRIA.

Beyrouth, Mélanges de la faculté orientale de l'Université de St. Joseph.

UNITED STATES.

Andover, Mass.... Phillips Academy (Dept. of Archæology).
Berkeley, Cal. ... University.
Boston... American Journal of Archæology.
Chicago... Open Court.
New York ... American Museum of Natural History.
— Popular Science Monthly.
— Science.
Philadelphia... Proceedings of American Philosophical Society.
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— Bureau of Manufactures.
— Records of the Past.

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